U/27-8

GOVERNMENT OF PALESTINE.

ANNUAL REPORT

OF THE

DEPARTMENT OF HEALTH

FOR THE YEAR

1927.

ANNUAL REPORT - 1927.

Index.

Sections. Pages.

I. GENERAL CONSIDERATIONS. 1 - 10

II. VITAL STATISTICS AND EPIDEMIC DISEASE. 12 - 29

(a) Vital Statistics.............................. 12
(b) Epidemic Service.............................. 15
(c) Training of Personnel.......................... 15
(d) Disinfection.................................. 15
(e) Infectious and Communicable Diseases.......... 17
(f) Vaccination against small pox................. 23
(g) Malaria and Antimalaria Measures.............. 24
(h) Rabies.. 29

III. MEDICAL SECTION. 30 - 50

(a) Government Hospitals.......................... 30
(b) Government Dispensaries....................... 31
(c) Voluntary Hospitals and Clinics............... 32
(d) Training of Nurses............................ 34
(e) Maternity and Child Welfare................... 36
(f) Ophthalmic Service............................ 39
(g) Lunacy.. 41
(h) School Medical Service........................ 42
(i) Railway Medical Service....................... 44
(j) Frontier Force and Police Medical Services.... 45
(k) Prison Medical Service........................ 46
(l) Training in "First Aid"....................... 47
(m) The Medical Commission........................ 47
(n) Medico-Legal Examinations..................... 48
(o) The Practice of Medicine, Pharmacy, Dentistry and Midwifery.............. 48
(p) International Opium Convention................ 50

IV. SANITARY ADMINISTRATION. 51 - 57

(a) Water Supplies................................ 51
(b) Sanitary Engineer's Section................... 52
(c) Municipal Sanitary Work....................... 54
(d) Village Sanitation............................ 57
(e) Licensing & Control of Trades and Industries. 57

V. RELIEF. 58

VI. QUARANTINE SERVICE. 59 - 62

(a) General....................................... 59
(b) Port Quarantine Operations.................... 60
(c) Medical Surveillance of Travellers............ 61
(d) Moslem Pilgrimage............................. 61
(e) Immigration................................... 61

VII. LABORATORY SECTION. 63 - 74

APPENDICES. 75 - 86

I. Report on the Activities of the Malaria Survey Section. 75
II. Report of the Malaria Research Unit. 80

ANNUAL REPORT OF THE DEPARTMENT OF HEALTH GOVERNMENT OF PALESTINE FOR THE YEAR 1927.

I. GENERAL CONSIDERATIONS.

A. ADMINISTRATION.

(a) Personnel.

There were no material changes in the posting of Senior Medical Officers of the Department.

Dr. J.A. Henderson relieved Dr. J.W.P. Harkness at the Directorate during study leave, and Dr. J. Macqueen acted as S.M.O. Jerusalem and District in place of the former.

Four Senior Medical Officers were raised from the maximum of Class II to Class I under the new grading.

Dr. Hamilton W. Dyke was appointed Specialist Surgeon, to fill the vacancy on the establishment, and was posted to Directorate, Jerusalem.

Mr. C. Morrall from Assistant Storekeeper, Medical Stores, was appointed Chief Clerk, Class III.

Miss F.I. Channell was appointed Matron of the Mental Hospital, Bethlehem.

Miss M. MacLagan was appointed to fill temporarily the new post of British Nursing Sister, Special Wards, Jerusalem.

Six new posts of Sanitary Sub-Inspector (Jewish Colonies) were filled locally.

The following was the distribution of staff:-

Appointment.	Class.	Name.	Station.
eadquarters & District Administration.			
irector.	"C"	Colonel G.W. Heron, C.B.E., D.S.O.	Jerusalem.
eputy Director. (Hospital & Medical Section).	"E"	R. Briercliffe, O.B.E.	do.
enior Medical Officer (Jerusalem District).	1	J.A. Henderson.	do.
enior Medical Officer (Samaria & Galilee).	1	W.K. Bigger, M.C.	Nablus.
enior Medical Officer at H.Qrs in charge of Sanitary and Epidemic Section.	1	J.W.P. Harkness.	Jerusalem.
nior Medical Officer (Railways, Land Quarantine and Haifa).	1	W.P.H. Lightbody.	Haifa.
nior Medical Officer (Jaffa & Gaza Districts).	1	A. Rankine, M.C.	Jaffa.
ecialist Surgeon.	1	H.W. Dyke.	Jerusalem.

Appointment.	Class.	Name.	Station.
Headquarters & District Administration (Contd).			
Asst. Senior Medical Officer (Jerusalem District).	2	J. Macqueen.	Jerusalem.
Chief Clerk.	3	C. Morrall.	do.
Hospital and Medical Service.			
Asst. Senior Medical Officer (Hospital and Schools).	3	D. Bulos, M.B.E.	Acre.
Asst. Senior Medical Officer (School of Instruction).	3	H.F. Khalidi.	Jerusalem.
Medical Officer (Hospital and Schools).	3	S. Bodossian.	Ramleh.
Medical Officer (Mental Hospital).	3	M.S. Maloof.	Bethlehem.
Medical Officer (Hospital and District).	3	F.I. Haddad.	Tulkarem.
Medical Officer (Hospital).	3	Y. Hajjar.	Jerusalem.
Medical Officer (Hospital).	3	I. Weitzman.	Haifa.
Medical Officer (Hospital and Schools).	3	H.S. Khalidi.	Nablus.
Medical Officer (Schools).	3	K. Kesheshian.	Jerusalem.
Medical Officer (Hospital and Schools).	3	F. Dejani.	Jaffa.
Medical Officer (Hospital and Schools).	3	N. Hamzeh.	Gaza.
Medical Officer (Hospital and Schools).	3	A.T. Sternberg.	Haifa.
Medical Officer (Special Clinic).	3	H.M. Torian.	Jerusalem.
Inspector of Pharmacies.	3	Farid Haddad.	Jerusalem.
Superintendent of Midwifery.	Special	Miss K.F. Townsend.	Jerusalem.
do.	"	Miss E. Spackman.	Nablus.
Matron.	"	Miss E. Dickin.	Jerusalem.
do.	"	Miss L.J. Hanson.	Nablus.
do.	"	Miss E. Davies.	Jaffa.
do.	"	Miss F.I. Channell.	Bethlehem.
do.	"	Miss E. Redmile.	Haifa.
British Nursing Sister.	"	Miss M.N.V. Harse.	Jerusalem.
British Nursing Sister.	"	Miss M. McLagan.	Jerusalem.
Sanitary and Epidemic Section.			
Sanitary Engineer.	2	L. Cantor.	Jerusalem.
Asst. Senior Medical Officer.	3	R. Oplatka, M.B.E.	Jaffa-Tel Aviv.
do.	3	H. Abu Rahmeh, M.B.E.	Seconded as Director of Public Health Transjordan.
do.	3	M. Shishmanoglou.	Jaffa.
do.	3	J. Tucktuck.	Nablus.
do.	3	Z. Haddad.	Haifa.
Medical Officer.	3	F.K. Abla.	Majdal.
do.	3	A. Abdel Al.	Hebron.
do.	3	K. Abu Ghazaleh.	Beersheba.
do.	3	G. Ayoub.	Jaffa.

Appointment.	Class.	Name.	Station.
Sanitary & Epidemic Section (Contd).			
Medical Officer.	3	M. Erdikian.	Acre.
do.	3	I. Haurani.	Gaza.
do.	3	K. Eid.	Ramallah.
do.	3	K. Bandaly.	Nablus.
do.	3	Taher El Khatib.	Safad.
do.	3	M.K. Mishalany.	Nazareth.
do.	3	A.A. Shehadeh.	Haifa.
do.	3	F. Shubeita.	Jaffa.
do.	3	E. Sikkarieh.	Beisan.
do. (Special Clinic).	3	M.A. Shukair.	Hebron.
do.	3	A. Haddad.	Ramleh.
do.	3	J. Hassoun.	Haifa.
do.	3	A. Shehadeh.	Jerusalem.
do.	3	I. Itayim.	Tiberias.
do.	3	S. Saleem.	Jerusalem.
do.	3	S. Yassin.	Jenin.
do.	3	A. Malchi.	Jerusalem.
Inspector of Public Establishments.	3	Vacant.	Jerusalem.
Quarantine Section.			
Asst. Senior Medical Officer.	3	Y. Chami.	Jaffa.
Medical Officer.	3	B. Franco.	Haifa.
Laboratory Section.			
Asst.Director(Laboratory Section)	1	G. Stuart.	Jerusalem.
Government Analyst.	2	G.W. Baker.	do.
Bacteriologist.	3	K.S. Krikorian.	do.
Asst. Analyst.	3	W. Itayim.	do.

(b) Ordinances and Regulations.

The following Ordinances and Regulations affecting Public Health have been enacted during the year:-

Ordinances.	Published as Bill.		Promulgated.	
	Official Gazette.	Date.	Official Gazette.	Date.
Criminal Procedure (Evidence) Ordinance 1927. (Certificates of Laboratory Tests & Analyses).	195	16-9-27.	198	1-11-27.
ntoxicating Liquors Ordinance 1927.	Extra.	4-11-27.	Extra.	4-12-27.
egulation of Trades and Industries in the interest of Public Health and Public Order.	"	29-11-27.	202	1-1-28.
rdinance relating to the Employment of Women and Children in Industrial Undertakings.	"	29-11-27.	202	1-1-28
edical Practitioners Ordinance 1928.	201	16-12-27.	205	16-2-28.

Regulations.	Official Gazette.	
	No.	Date.
Regulations made under Section 8 of the Dangerous Drugs Ordinance.	181	16-2-27
Regulations under the Workmen's Compensation Ordinance - Names of Medical Referees.	185	16-4-27.
Regulations under the Coroners' Ordinance 1926.	187	16-5-27.
Order under the Antimalarial Ordinance 1922. Order applying A.M. Ordinance to Jerusalem, Bethlehem and Jericho Sub-Districts.	189	16-6-27.
Regulations made under Section 13 of the Workmen's Compensation Ordinance 1927 re Fees etc. payable to Medical Referees.	193	16-8-27.
Regulations made under Section 2 of the Quarantine Ordinance 1922 re observation of persons entering Palestine by road from Syria or by air from Iraq.	194	1-9-27.
Revised Regulations for Medical Treatment and Medical Boards: (a) Hospital Dispensary Treatment. (b) Payment for Hospital. (c) Class of Hospital Accommodation. (d) Private Arrangement for Treatment. (e) Procedure for Medical Attendance. (f) Vaccination. (g) Special Treatment. (h) Special Regulations. (i) Medical Boards.	194	1-9-27.
Under A.M. Ordinance 1922. Order by D.C., S.D. applying the A.M. Ordinance to all Towns and Villages in the Southern District of Palestine.	195	16-9-27.
Regulations Department of Health Laboratories fees for Bacteriological and Chemical examinations. Amendments to be made in the Regulations published in Official Gazette No.96 of 1-8-23.	197	16-10-27.
Rules of Court. Allowance to Witnesses Rules 1927. Medico-Legal Fees.	198	1-11-27.
Regulations made in pursuance of the powers conferred under section 32 of the Intoxicating Liquors Ordinance 1927.	Extra.	4-12-27.
Inflation of Carcases with air from the mouth prohibited. Under the Diseases of Animals Ordinance 1926.	201	16-12-27.

The following Ordinances and Regulations were under preparation:-

1. Public Health (Pharmacy) Ordinance, Assistant Pharmacists.
2. Dangerous Drugs Amendment Ordinance.
3. Regulations under Trades and Industries Ordinance.
4. Midwives Ordinance.
5. Epidemic Diseases Special Powers Ordinance.
6. Nursing Sisters Pension Ordinance.

(c) Revenue and Expenditure.

The following is a summary of the estimates of Revenue and Expenditure for the financial period 1-4-27 to 31-12-27 (9 months) of 1927. The comparative total figures of estimates of expenditure for previous years are given below.

	Revenue.	Expenditure.		
1-4-27 to 31-12-27.	£E. 7320.	A. Personal Emoluments.	£E.52,948	
		B. Other Charges.	£E.24,955	
				£E.77,903

Detail of Other Charges.

Transport and Travelling.	£E.4300
Railway Fares and Freights.	1300
Lighting and Heating.	1000
Drugs, Dressings & Instruments.	3900
Vaccine and Sera.	300
Equipment and Stores.	1300
Disinfectants and Maintenance of Disinfecting Machines.	1000
Hospital Diets.	5900
Clothing.	1150
Epidemic Outbreaks.	375
Medical Attendance in Private Hospitals.	375
Relief.	113
Contribution to Tropical Diseases Bureau.	50
Contribution to Colonial Medical and Sanitary Advisory Committee.	26
Fees for Notification of Births and Deaths in Villages.	360
Medical Library.	45
Services rendered by Quarantine Board of Egypt.	60
Telegrams, Telephones & Postage.	600
Contingencies.	75

Special Expenditure.

Clayton Disinfecting Machine.	200
Steam Disinfecting Machines.	1380
Operating Table.	135
Animals.	96
Motor Ambulances.	915
	£E. 24955

Revenue.		Expenditure.		
1926-27.	£E.13830.	A. Personal Emoluments.	£E.68,987	
		B. Other Charges.	£E.28,692	£E.97,679
1925-26.	£E. 9050.	A. Personal Emoluments.	£E.63,140	
		B. Other Charges.	£E.21,341	£E.84,481
1924-25.	£E. 9570.	A. Personal Emoluments.	£E.61,791	
		B. Other Charges.	£E.20,632	£E.82,423
1923-24.	£E.11590.	A. Personal Emoluments.	£E.64,226	
		B. Other Charges.	£E.29,032	£E.93,258
1922-23.	£E. 8720.	A. Personal Emoluments.	£E.72,508	
		B. Other Charges.	£E.32,860	£E.105,368
1921-22.	£E. 8150.	A. Personal Emoluments.	£E.70,914	
		B. Other Charges.	£E.82,795	
			£E.153,709	
Less estimated cost of Railway Medical Service.			£E. 10,824	£E.142,885

The Palestine Government Estimates of Revenue and Expenditure for the financial period under review were as follows:-

Revenue.	£E. 1,728,131
Expenditure.	£E. 1,875,824

The increase in the Estimates was due, in addition to normal increments of salaries, to certain new appointments of which the following were the most important:-

4 S.M.Os promoted from Class II to Class I.
1 British Nursing Sister.
3 Staff Nurses.
2 Hospital Attendants.
4 Hospital Servants.
1 Clerk, Grade IV.
1 Clerk, Grade V.
6 Sanitary Sub-Inspectors.
2 Laboratory Attendants, Grade IV.
1 Laboratory Attendant, Grade V.

Other Charges.

2 Motor Ambulances.
Steam Disinfecting Machines.
Telegrams, Telephones & Postage. (Transferred to Department of Health Estimates).

./.

B. PUBLIC HEALTH.

1. General Diseases.

It is difficult to ascribe to any particular malady the responsibility for the comparatively high death rate recorded in another section of the Report.

It will be seen that the age groups 1 month to 5 years account for no less than 57.76%, while the age groups 5 years to 50 years subscribe only 18.20% to the total deaths. These records are clearly indicative of infantile disease and neglect, a robust childhood and adult life and a comparative freedom from communicable and epidemic disease from the age of 5 years onwards. Apart therefore from infantile disease, to which I will refer again, one can state that the population has been remarkably healthy during the year, and this statement is supported by the virility expressed in the high general birth rate of 50.35 per 1000, and actually of 56.09 in the case of the Moslems.

It would appear from the statistics of admissions to Hospitals, numbering 33417 and attendances at Dispensaries, numbering 1,288,847 that the people, more especially the Jewish sections, were riddled with disease. This, however, is not the case. There is certainly much trachoma amongst the Arabs and Christians and malaria amongst the Jews, but the numbers of attendances for free medical treatment is out of all proportion to the incidence of serious disease.

A considerable expansion of the facilities for treatment afforded to infants has taken place during the year. There is an increasing confidence on the part of the mothers in the centres that have been established and a consequent increase in attendances. 6 new Infant Welfare Centres have been opened, and at least two more would have been opened if we had been able to find suitable nurses, of whom there is a serious shortage at present.

The period between infancy and school age when medical supervision recommences shows a very high mortality and requires special attention in the future by development of not only Infant, but Child Welfare Centres, with concentration on instruction to mothers in the care of their children.

The services rendered by the Voluntary and Charitable Hospitals and by the band of ladies who conduct dispensaries in remote villages or assist in welfare work in towns have been invaluable to the country. Following the earthquake in July, the C.M.S. Hospitals in Nablus, and in Jaffa in particular, dealt with a large proportion of the seriously injured.

The general tendency amongst Voluntary and Charitable organizations is to set up Hospitals or Orphanages in the religious centres which are already more than adequately supplied with such Institutions. The 814 Hospital beds and the 1290 orphans accommodated in Jerusalem is a case in point.

./.

If a proportion of those beds could be devoted to special diseases such as tuberculosis, others transplanted to the more remote districts of Palestine and Transjordan, and several of the larger orphanages converted into Infirmaries for patients suffering from chronic and incurable disease or from the milder forms of lunacy, the balance would be more satisfactorily maintained and the distribution of medical and charitable aid be more in keeping with the needs of the country.

The Scottish Mission Hospital at Tiberias continued to provide Hospital facilities for the population of a large area in Galilee and northern Transjordan and relieved the Government of considerable responsibilities in that region.

The Ophthalmic Hospital of the Order of St. John again dealt with a remarkable number of cases, and continued to train medical officers and nurses for the Government ophthalmic clinics, over which the Chief Surgeon of the Hospital maintains an inspectional supervision.

The Hospitals of the Hadassah Medical Organization and of the Kupat Cholim and the colony clinics under those organizations very completely dealt with the majority of the sick amongst the Jewish urban and rural population.

2. Communicable Diseases.

There was a notable decrease in the incidence of enteric fever both in the colonies and in Tel Aviv, and also in Jerusalem and in other towns where it was so prevalent the previous year. The comparative figures are as follows:-

Jewish Colonies and Tel Aviv.	1926	417.
	1927	211.
Jerusalem and other Towns.	1926	773.
	1927	691.

The general decrease in the incidence of the disease undoubtedly was due to the protection afforded by inoculation, which was very extensively carried out in 1926 in the affected areas and continued to be applied in 1927 in both Arab and Jewish centres of infection.

It is regrettable that the improvement cannot be ascribed to better sanitation in colonies in which, despite very considerable effort both on the part of the Department and of the central Jewish Organizations, very little has yet been done by the colonists themselves in the newer settlements towards improved conservancy and scavenging. In the older pre-war colonies, however, notable advances can be recorded.

The adverse financial condition of most of the colonies was undoubtedly a contributing factor to the apathy of the newer colonists towards the elementary principles of household sanitation. Their experience of having so long been assisted led them to expect the same agencies, or the Government, to carry out for them works on sanitation or antimalarial measures which are essentially their own responsibility.

The actual medical aid in colonies supplied by the Hadassah and Kupat Cholim organizations is most generous, and an attempt is being made to extend the duties of the local doctors to include supervision of sanitation and health propaganda amongst the colonists.

There was no case of small pox in the country in spite of a considerable epidemic in Syria. The country as a whole is well protected by vaccination, and it is recorded by one Senior Medical Officer that one rarely finds any child entering school who has not been vaccinated.

Following upon a small pox scare in Jerusalem on account of an ambulatory imported case from Damascus, no less than 34,295 vaccinations and re-vaccinations were carried out in the period of 4 weeks.

Measles again proved the most serious infectious disease and accounted for a large proportion of the child deaths. It is most difficult to control or to treat in villages and the primitive measures of so called treatment adopted by the mothers leads to a high case mortality.

83 typhus cases occurred, but at no time has it appeared in serious epidemic form.

Malaria occurred with some severity in certain uncontrolled or uncontrollable areas, notably in the Tiberias district and the Jordan Valley, in certain parts of the coastal plain and in one or two neglected places in the Emek Israel. It was a wet and almost a malaria epidemic year, but it was satisfactory to find that in controlled towns and villages there was either no incidence or no increased incidence compared to the 3 previous but dry years.

The threat of cholera from Iraq necessitated a very careful review of our internal organization for epidemics, of our frontier quarantine control and our surveillance measures at destination of arrivals from neighbouring countries. That review enabled us to make several alterations in the epidemic organization and also demonstrated the inadequacy of our infectious disease accommodation in certain centres. To overcome such inadequacy we are placed in the position in centres other than Jaffa and Haifa, of either having to provide emergency tent Hospitals or to requisition buildings. For this we are prepared but we require certain additional legal powers under an Ordinance already put forward. In this connection it is a matter for regret that in Jerusalem, Nablus and Haifa the credits voted for infectious hospitals were withdrawn on account of financial stringency, leaving only that of Jaffa for construction in 1928.

A very satisfactory coordination of quarantine and epidemic measures was arrived at between Palestine, Syria, Iraq and Egypt following upon a Conference of representatives of those countries at Baghdad in October.

./.

The decline of immigration has permitted us to concentrate in future on Haifa as the Quarantine Centre for Palestine, while providing at Jaffa disinfection facilities and a small lazaret capable of accommodating 50 persons at a time. At Haifa very considerable improvements of the Lazaret have been effected on a semi-permanent basis and it is now possible to provide good accommodation for 1st, 2nd and 3rd class persons to a total number of 466.

When the Hijaz Railway route to Medina and Mecca is open to pilgrims, it will be necessary to increase the accommodation considerably and connect up the Lazaret to the Railway system.

There occurred a very considerable increase in the number of foreign pilgrims from the Hijaz returning via Egypt and Palestine to Iraq and Persia by the trans-desert route. Special arrangements, for which proposals have been made, are necessary at Kantara, as this route is becoming increasingly popular and allows of a pilgrimage en route to the Dome of the Rock in Jerusalem, the 3rd most holy Moslem Shrine.

C. INDUSTRIAL CONDITIONS.

The Regulation of Trades and Industries Ordinance was passed on 29-11-27, and with the Regulations under that Ordinance it will now be possible to control trades outside, and to organize a better system inside, Municipal areas. The schedule of trades includes a considerable number of those previously unlicensable under Municipal Law, and the full terms of the Ordinance will in these cases be applied gradually so that no hardship may be involved. The active cooperation of the Municipal Sanitary Surveyors, which has proved so valuable in the past, will be a most important factor in the application of this Ordinance, which bears so intimate a relation to the health of the community and to the prevention of communicable disease.

The remarkable activity in the building trade, and the erection in particular of shops, in Jerusalem, Jaffa and Haifa, and the developments in many villages would appear to indicate a lack of industrial and agricultural depression generally in the country. Amongst the Jewish population, however, that depression is an undoubted fact, and militates against any material improvement in housing in certain quarters of Tel Aviv and its neighbourhood, and in the newer colonies of the Emek Israel.

The Industrial Employment of Women and Children Ordinance 1927, will allow of control of the conditions of labour under which certain Industries, not included in the schedule under the Regulation of Trades and Industries Ordinance, are conducted.

D. MUNICIPAL SANITARY SERVICES.

The organization and control of these services has in recent years shown in the larger towns very marked improvement, due to the untiring efforts of the Sanitary Surveyors. In each of the four towns Jerusalem, Jaffa, Haifa and more recently Gaza, a British Sanitary Surveyor is in charge and very fully has each satisfied both the Municipality he serves and this Department which was responsible for advising his appointment and with which he cooperates so generously. Their positions are difficult in certain respects and require regularizing.

In Jerusalem various insanitary centres within and without the old city have been cleared up, public latrines installed, the N.W. drainage system considerably extended, and a very close inspection of sanitary installations of new houses has been maintained.

In Jaffa, the new slaughter house and the Municipal stables built under the Sanitary Surveyor's supervision are models for the rest of the country.

In Haifa, although the financial situation will not allow of a general main drainage scheme, a large area of Haifa has already been drained, to the plan of the general scheme, by the Municipal Engineer in cooperation with the Sanitary Surveyor and this Department. Complete house drainage systems, including approved type of internal sanitary appliances, were installed in all new houses and the many sanitary improvements to existing houses included the almost complete new drainage of the largest residential quarter.

In Gaza, the water supply was remodelled resulting in a largely increased yield.

Nablus badly requires a competent Sanitary Surveyor to carry out many much needed reforms, which the people themselves are demanding.

E. HOUSING AND TOWN PLANNING.

The building development was particularly active within the Town Planning areas of Jerusalem, Haifa and Nablus.

A few new colonies sprang up, but in main near the larger towns, while the replacement of wooden huts by masonry has been noticeable in some of the more prosperous colonies.

Villages have shown their prosperity and sense of security by building larger and more substantial houses.

The construction of good residences outside the old town in replacement of those damaged or destroyed by the earthquake has been a feature in Nablus and in Raineh, where an entirely new village on a neighbouring plateau is being constructed on model lines under the supervision of the Medical Officer of the Department.

The chief value of the Town Planning Ordinance undoubtedly lies in its Regulations prescribing Building Permit Committees and in the issue by the Central Commission, for adoption by Municipalities, of the Model Bye-Laws for Building, Sanitation etc. It has been possible to control thereby all new construction in Municipal areas, and to regulate in each case the type of construction, the relation

/to other

to other buildings and spacing, and the type of internal sanitary fittings and external drainage. The association of the Department of Health Medical Officers with the Municipal Sanitary Surveyors and Engineers has resulted in a high standard of individual house construction and of sanitation throughout Palestine.

Improvements of existing insanitary quarters in towns and of old hutting in colonies is a slow and expensive process, but, none the less, considerable advances have been made by judicious application of Regulations under Public Health and other Ordinances.

True Town Planning was limited to the production of skeleton plans for certain towns and plans for quarters of towns in which development was about to proceed. It was, however, the case that as a rule the development preceded the production of the plan and the lengthy process necessary to obtain its approval, such development however being invariably controlled, in so far as individual houses were concerned, by the activities of the members of the Building Permit Committees.

II. VITAL STATISTICS AND EPIDEMIC DISEASE.

(a) Vital Statistics.

The population at 1st July 1927, was estimated to be approximately 882,000 distributed as follows:-

Resident in Towns & Villages	778,369	Estimated.
Nomadic Tribes	103,331	Census, 1922.
	881,700	

Classified by religious creeds:

Moslems.	Christians.	Jews.	Others.	Total.
643,556	76,839	147,687	8,618	881,700

Births, Deaths and Infantile Mortality.

Birth and Death ratios are calculated upon the settled population only. The population of the nomadic tribes (103,331 Moslems) and such records of Births and Deaths as are received from this group are excluded from the figures which follow.

39,193 births and 21,806 deaths were recorded. The corresponding figures for the previous year were 40,741 births and 18,620 deaths and for 1925 35,479 births and 19,611 deaths. Recorded deaths under one year of age were 7,857 compared with 6,642 in the year 1926 and 6,693 in the year 1925.

./.

The ratios per thousand of the population for five years are as follows:-

Year.	Estimated population at midyear.	Death ratio.	Birth ratio.	Infantile Mortality ratio.
1923	662,013	25.67	47.43	184.7
1924	681,245	25.04	51.31	184.8
1925	719,508	27.25	49.31	188.6
1926	761,896	24.43	53.47	163.0
1927	778,369	28.01	50.35	200.5

The estimated increase of population during the last four years was calculated to be:

Calendar Year.	Natural Increase.	Increment per 1000 of population.	Difference Immigration & emigration.	Increase or decrease per 1000 of population.	Total increment per 1000 of population.
1924	17,283	25.3	+ 10,301	15.1	40.4
1925	15,868	22.0	+ 30,546	42.5	64.5
1926	22,121	29.0	+ 4,481	5.9	34.9
1927	17,387	22.3	- 3,826	- 5.0	17.4

The natural increase of the religious divisions of the population, expressed as a ratio per thousand, is:

Year.	Christians.	Moslems.	Jews.	Other Religions.	Total increment.
1924	23.6	25.6	25.7	19.7	25.3
1925	18.4	23.5	18.1	26.8	22.0
1926	22.1	31.6	23.9	20.0	29.0
1927	18.8	23.0	21.6	22.1	22.3

The Birth, Death and Infantile Mortality ratios of these sub-divisions of the population are as follows:-

./.

		Christians.	Moslems.	Jews.	Other Religions.
1924.	Births.	40.4	55.5	38.3	39.0
	Deaths.	16.8	29.9	12.6	19.3
	Infantile Mortality.	151.9	199.0	105.7	146.0
1925.	Births.	37.2	54.7	33.2	59.3
	Deaths.	18.8	31.2	15.1	32.5
	Infantile Mortality.	162.4	200.5	131.3	124.2
1926.	Births.	40.0	60.2	36.0	55.0
	Deaths.	17,9	28.6	12.1	34.9
	Infantile Mortality.	158.0	172.5	108.1	170.9
1927.	Births.	38.9	56.1	35.1	50.3
	Deaths.	20,1	33.0	13.4	28.1
	Infantile Mortality.	187.2	216.7	115.3	156.6

SUMMARY OF BIRTHS AND DEATHS - 1927.

	Totals for Towns.	Total for Districts excluding Beersheba.
DEATHS.		
Under 1 month.	808	1098
1 month to 1 year.	1868	4083
1 to 2 years.	1336	2591
2 to 5 years.	756	1965
5 to 10 years.	206	467
10 to 20 years.	224	419
20 to 50 years.	1058	1600
Over 50 years.	1517	1799
Unknown.	2	9
Total Deaths 1927.	7775	14031
Total Deaths 1926.	6725	11895
BIRTHS.		
Total Births 1927.	13681	25512
Total Births 1926.	14362	26379
INFANTILE MORTALITY.		
Rate per 1000 Births 1927.	195.60	203.08
Rate per 1000 Births 1926.	163.34	162.85

Religions.	Christians.	Moslems.	Jews.	Others.	Totals	Percentage.
Populations.	76839	545225	147687	8618	778369	
DEATHS.						
Under 1 month.	145	1527	224	10	1906	8.74
1 month to 1 year.	415	5104	374	58	5951	27.29
1 to 2 years.	237	3425	211	54	3927	18.00
2 to 5 years.	105	2485	107	24	2721	12.47
5 to 10 years.	43	593	30	7	673	3.08
10 to 20 years.	55	527	51	10	643	2.94
20 to 50 years.	183	2150	294	31	2658	12.18
Over 50 years.	362	2211	696	47	3316	15.20
Unknown.	-	9	-	2	11	.05
Total Deaths.	1545	18031	1987	243	21806	
Deaths per 1000.	20.10	33.07	13.45	28.19	28.01	
BIRTHS.						
Total Births.	2991	30586	5182	434	39193	
Births per 1000.	38.92	56.09	35.08	50.35	50.35	
INFANTILE MORTALITY.						
Total Deaths under 1 year.	560	6631	598	68	7857	
Rate per 1000 Births.	187.22	216.79	115.39	156.68	200.46	

(b) Epidemic Service.

The mobile epidemic units were not employed in the field during the year. The outbreak of cholera in Basra and its extension to the northern boundaries of Iraq between the months of July and October called for careful examination of the organization elaborated in previous years for coping with serious epidemic disease in Palestine.

It was realised that the law of the country did not provide the Department with sufficiently extensive powers and that emergency measures taken in the face of a serious situation might leave the Government open to unreasonable claims for compensation after the event. A draft Ordinance was therefore prepared and submitted to Government authorizing special powers for the Department at any time after declaration by the High Commissioner that a situation exists which seriously threatens the health of the public.

During the year in pursuance of the recommendations of the Typhoid Commission of 1926 the increase of hospital accommodation for communicable diseases engaged the attention of the Department. Recommendations for a building programme were submitted to Public Works Department and detailed plans for the following projects, approved in principle by Government, were completed:-

(a) A small infectious disease hospital in Jerusalem.
(b) A pavilion annex to the Municipal Hospital, Nablus.
(c) Isolation wards and staff accommodation at the Quarantine Lazaret, Haifa.
(d) A pavilion annex to the Municipal Hospital, Jaffa.
(e) Minor additions to and modifications of the Quarantine Lazaret, Jaffa, to permit its use as an emergency isolation hospital.

For financial reasons the first three projects have been postponed but progress is being made with the two last items.

(c) Training of Personnel.

A course of instructions was held for Sanitary Inspectors of the Department in spring. Six Inspectors appointed for special duty in Jewish settlements attended and on passing a written and viva voce examination were confirmed in their appointments.

Lectures on Public Health Law and Administration were given to three doctors who had been undergoing instruction at the Department of Hygiene of the Hebrew University.

(d) Disinfection.

The mobile equipment of the Department consists of 23 portable current steam disinfecting machines, and one portable sulphur gas apparatus for vermin destruction. In addition to these each district has its quota of Thompson's drums which form part of the mobile epidemic equipment, and are suitable for use where the amount of material for treatment is small in quantity. Twenty of the current steam machines are relics of the war which were obtained by the Department and put into working order at very small cost. They are stationed at fifteen centres throughout the country so that each district has at its disposal means for dealing with infective material. As these war machines become unserviceable they are being replaced by portable petroleum furnace heated Delepine Thresh machines of which three are now in use. These machines are extremely light, weighing no more than 13 cwt. and are easily moved over country tracks by the light type of draught animal common to the country. In Palestine where the principal heating fuel is oil, and coal is costly and has to be transported along with the machine, these petroleum furnace heated machines are of great convenience.

In Jerusalem, Jaffa and Haifa, there are disinfecting and bathing stations for town and port work which are provided with non portable machines using steam under pressure. The ports of Jaffa and Haifa are in addition equipped with Clayton gas apparatus for disinfecting baggage and merchandise in bulk.

Four portable machines of the Thresh type are on loan to the Department of Police and Prisons for use in prisons and Jail Labour Camps.

(c) Infectious and Communicable Diseases.

11,482 cases with 1188 deaths were notified compared with 10,407 and 1164 deaths in the year 1926. The gross incidence of communicable disease as gauged by notifications has therefore not altered to any material extent. The principal causes of death amongst the communicable diseases were pneumonia (391) measles (324) tuberculosis (238) enteric fevers (78) and dysentery (31).

Cerebro-Spinal Meningitis.

7 cases all fatal occurred compared with 3 cases and 2 deaths in the year 1926.

Chicken Pox.

197 cases of which 2 were fatal. The previous year's figures were 180 cases and 2 deaths. Departmental instructions require as a routine measure the vaccination of all contacts with calf lymph. The main incidence was during the first six months of the year with the maximum in the month of May.

Diphtheria.

151 cases and 12 deaths were reported. In 1926 79 cases and 5 deaths were reported. The majority of the cases were notified in the towns of Jerusalem (36) Tel Aviv (29), Haifa (21) and Safad (29). Coincidently these are the towns where facilities for bacteriological diagnosis exist. Of the 36 cases reported in Jerusalem 6 were fatal, while of the 79 cases in the other three towns only one died. Incomplete notification is suggested in Jerusalem and in Jaffa town (where six cases and two deaths were recorded). It cannot, however, be said that the figures in general give a reliable index of the prevalence of infections with the toxic form of the causative organism. Two thirds of the notifications were made during the last five months of the year.

Dysentery.

Of all classes of dysentery 1782 cases and 31 deaths were reported compared with 1731 cases and 37 deaths last year. The season of incidence is from May to December. The principal centres of notification are Jerusalem town (115), Jaffa sub-district (187), Tel Aviv (481), Haifa Town (297) and Tiberias town and sub-district (379). The figures show an increase on last year of notifications in Jerusalem and Haifa towns and in Tiberias town and district. Of the total cases notified 17% were classified as bacillary the remainder amoebic dysentery, on the results of laboratory findings.

./.

Typhoid Fever.

1001 cases and 76 deaths were reported compared with 1402 cases and 110 deaths in 1926. The case fatality rate was 7.5% compared with 7.8% in the previous year.

There was a general decrease in the cases reported throughout the country except in Jerusalem town and district, Bethlehem and its district, settlements in Jaffa district, and in Haifa district.

In view of the general decrease of cases reported in most areas it is difficult to assess with exactitude the full share which prophylactic vaccination has played in the general reduction in the number of cases. In those areas, however, where special efforts had been made to vaccinate large numbers of the population the reduction in prevalence is very marked. A comparison of the monthly incidence in Tel Aviv (population 40,000) where in September and October 1926 nearly 50% of the population received prophylactic inoculation, with the incidence in Jerusalem town (population 70,000) where a general vaccination was not attempted until the autumn of 1927 is significant.

	1926.				1927.											
	September	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Tel Aviv.	37	28	17	1	2	5	-	2	9	7	9	11	15	12	4	8
Jerusalem.	46	41	11	10	2	4	1	2	12	20	28	39	44	39	23	21

In the villages of the Emek Israel 192 cases occurred in a population of 4650 in the spring of 1926. 4260 persons were given two doses of vaccine during the outbreak. Subsequent to this procedure there occurred only 4 sporadic cases in the remainder of the year. The area remained for practical purposes free from the disease during the autumn when a high incidence is usually expected, and during the whole of 1927 only 35 cases were reported. Despite a considerable amount of effort both on the part of the Department and on the part of the Vaad Habriuth, it cannot be said that the sanitary conditions in these settlements or the environmental hygiene of the people underwent such radical improvement as would account for the decreased incidence of the disease.

As will be seen from the following table the age incidence in the three main groups of the population falls heavily on the ages five to twenty. In the Jewish group a feature not present in the other groups is the high incidence in the age period twenty to twenty five.

./.

Unfortunately absence of statistical data regarding age distribution of the population prevents calculation of specific age group morbidity rates so that analysis of the differing age incidence is not possible. It is to be borne in mind, however, that a large proportion of the Jewish section is composed of immigrants and this probably influences the age composition of this group, its liability to exposure to infection, and possibly also its general resistance to endemic disease.

Age and Sex Incidence of Typhoid - 1927.

Age periods.	Christians.		Moslems.		Jews.		Others.		Totals.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
0 - 2	1	1	3	-	5	8	-	-	9	9
2 - 5	6	5	12	7	27	19	1	-	46	31
5 - 10	21	15	41	24	55	29	-	-	117	68
10 - 15	18	16	37	19	16	28	-	-	71	63
15 - 20	20	20	36	11	16	22	-	-	72	53
20 - 25	13	7	25	13	70	48	-	-	108	68
25 - 30	8	8	21	16	35	34	-	-	64	58
30 - 35	6	7	15	8	20	10	-	-	41	25
35 - 40	1	3	6	1	11	8	-	1	18	13
40 - 45	1	2	2	-	5	6	-	-	8	8
45 - 50	2	5	2	-	-	5	-	-	4	10
50 - 55	2	1	2	2	6	8	-	-	10	11
55 - 60	1	-	-	-	2	1	-	-	3	1
60 - 65	2	1	2	-	1	-	-	-	5	1
65 - 70	-	-	1	-	2	-	-	-	3	-
70 - 75	-	-	-	-	2	1	-	-	2	1
Totals.	102	91	205	101	273	227	1	1	581	420

Paratyphoid Fevers.

111 cases with 2 deaths were recorded, a small decrease from last year when 117 cases and 6 deaths were notified. Jerusalem town provided 61 cases and 1 death. The principal months of incidence were June, July and August.

Measles.

3305 cases with 324 deaths were reported. The case fatality rate was 9.8% compared with 13% in 1926 and 1925. The months of principal incidence were January, June, November and December. The bimodal incidence, namely winter and early summer has not been clearly shown in the returns of previous years, but indicates that the epidemiological features of the disease are the same in Palestine as in [illegible] climates. Cases and deaths classified by communities are as follows:-

./.

	Christians.	Moslems.	Jews.	Others.	Total.
Cases.	497	2557	248	3	3305
Deaths.	40	266	18	-	324

Of the 324 fatal cases, 133 were under 2 years of age, 148 between the ages of 2 years and 5 years and 43 over five years of age.

Mumps.

813 cases reported compared with 1445 in 1926.

Plague.

No cases of plague occurred during the year. Trapping of rats was carried out systematically in the ports of Jaffa and Haifa. 509 rats were submitted to pathological examination. None were found infected.

Puerperal Fever.

23 cases with 17 deaths were notified. The figures for the previous year were 23 cases and 19 deaths. Of the 23 cases reported 3 were Jewish, 3 Christian and 17 Moslem.

Relapsing Fever.

25 cases were reported, an increase over the numbers notified last year. As with typhus fever the incidence of this disease appears to increase in the summer season.

Scarlet Fever.

Only 66 cases with 3 deaths were reported. The incidence of the disease appears to be on the wane. Figures for three years are as follows:-

	Jews.	Others.	Total Cases.
1925.	46	12	58
1926.	278	28	306
1927.	53	13	66

Erysipelas.

162 cases and 11 deaths were notified. 144 cases and 8 deaths were reported in 1926. Of the cases 19 were Christian, 62 Moslem and 81 Jewish.

Typhus Fever.

83 cases with 1 death were notified. In 1926 there were 86 cases and 1 death. The incidence remains sporadic.

./.

Whooping Cough.

477 cases and 11 deaths were recorded against 644 cases and 12 deaths in 1926.

Small Pox.

One fatal case occurred in Jerusalem town in December. The patient had contracted the infection in Damascus where the disease was epidemic. He arrived in Palestine on the 20th November and was recognized as suffering from the disease in Jerusalem on the 3rd December, some three days after the first appearance of the rash and about five days after his arrival in the town. The patient was a pickpocket and on this account it was impossible to trace his movements and contacts in the town. The Senior Medical Officer promptly organized a general vaccination campaign. Special action was taken in regard to two inns in which the patient had slept and the quarters in which these were situated. Vaccine was supplied to Hospitals and practitioners free of charge and three special vaccination stations were opened for the public by the Department.

The public in Palestine has fortunately not yet become indifferent to the value of anti-small pox vaccination. They responded remarkably to the propaganda of the Department. Within four weeks 34,295 vaccinations had been performed, a number approximately equivalent to 50% of the estimated population of the town.

Anthrax.

6 cases of malignant pustule were reported. There were no fatalities. A butcher, a stable man of the Society for Prevention of Cruelty to Animals and an employee of a Veterinary Officer who assisted in the post mortem of an animal were three of the victims. The other three patients were females. The Department provides serum treatment for all such cases and this, with or without excision, according to the circumstances of the case has been found effective.

Schistosomiasis.

44 cases were notified. 6 contracted infection in Jaffa district, 1 in Um Khalid a few miles north of the Auja River in the same region. The source of infection of the remainder was Egypt or Arabia. The form of disease contracted locally is urinary Schistosomiasis. The majority of cases infected in the Yemen region of S. Arabia suffered from infection with Schistosoma mansoni. The intermediate host found in Palestine is the Isodora truncata. In the endemic area Copper Sulphate solution is used periodically to exterminate the snails in collections of water suitable for such treatment and known as foci of infection. The Wady Musrara, a tributary of the Auja river, does not lend itself to treatment, except in the late summer and remains responsible for the majority of locally contracted cases.

./.

Tetanus.

There were 37 cases and 28 deaths. The Department proposes to stock concentrated serum for the more effective treatment of cases by intrathecal injections.

Tuberculosis.

635 cases with 238 deaths were reported. The number of deaths notified exceeds last year's figure by two. Cases notified last year were 543. 390 cases and 155 deaths from tuberculosis of the respiratory system were reported in towns. These figures are approximately 69% of cases of all forms of tuberculosis notified in towns and 79% of deaths from all forms of tuberculosis occurring in towns.

In last year's report it was indicated that notification of cases and of tuberculosis as a cause of death was probably incomplete. The following is the classification of the cases and deaths reported during 1927.

	Cases.	Deaths.
Tuberculosis of the respiratory system.	453	189
" " " central nervous system.	28	11
" " " intestines and Peritoneum.	36	25
" " " vertebral column.	10	1
" " " joints.	8	3
" " " skin & sub-cutaneous tissues.	4	-
" " " bones (except vertebral column).	28	3
" " " sympathic system (except abdominal).	60	1
" " " genito-urinary system.	2	1
Disseminated Tuberculosis acute.	1	1
" " chronic.	5	3
Total.	653	238

Classification of deaths from tuberculosis by population groups:-

	Deaths.	Percentage of all deaths caused by tuberculosis.	Death rate from tuberculosis per 1000 of population.
Christians.	29	1.87	.37
Moslems.	122	.67	.22
Jews.	87	4.37	.59

As explained in last year's report it is not considered that these figures give a complete indication of the prevalence of the disease. This refers particularly to the Moslem group. The figures for the Jewish group of the population are probably subject to least error or deficiency.

./.

Leprosy.

16 new cases were reported. The total number of cases at present known to the Department is 67.

The arrangements made for treatment of cases as out-patients at Government dispensaries continues. Except in a few cases attendances for treatment are not sufficiently regular. The number of out-patients so treated is 12.

Arrangements were made for the periodical examination of cases discharged from the Moravian Hospital for Lepers as presumptive cures. 6 cases are at present under observation.

(f) Vaccination.

During recent years and 1926 and 1927 in particular, the country has enjoyed the advantages which accrue to a population adequately protected by vaccination. In 1926 there was a high incidence of small pox in Egypt and in 1927 Syria and particularly Damascus reported a large number of cases. In both of these years infection has been introduced to Palestine by imported cases, but in no instance has the definite introduction of infection resulted in spread of the disease or secondary cases in Palestine. Fortunately the character of the disease is still fresh in the memory of the present generation in Palestine and the public, from educated townsman to village fellah, appreciates the protection conferred by vaccination. Moreover, when circumstances necessitate, the Department can, under the existing law, make vaccination and re-vaccination compulsory.

The total number of vaccinations performed during the year was 89,600. Of 44,263 primary vaccinations the results were observed in 37,280 and of these 32,869 or 88.16% were successful. Included in the total of 89,600 are 4,638 vaccinations performed on persons entering the country at the ports of Jaffa and Haifa.

CASE & DEATH INCIDENCE OF INFECTIOUS DISEASES BY MONTHS - 1927.

	January.		February.		March		April		May		June		July		August		September.		October.		November.		December.		TOTALS.	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Cerebro Spinal Fever.	-	1	2	1	-	1	1	1	1	1	2	1	-	-	-	-	1	1	-	-	-	-	-	-	7	7
Chicken Pox.	17	-	13	-	28	-	22	-	58	1	23	-	3	-	6	-	3	-	-	-	8	-	16	1	197	2
Diphtheria.	6	-	8	1	10	1	6	-	7	-	5	1	6	2	20	-	32	2	16	2	21	1	14	2	151	12
Dysentery all Classes.	77	2	62	1	48	-	68	-	241	3	152	7	124	6	150	2	200	3	189	3	269	2	202	2	1782	31
Typhoid Fever.	37	2	26	1	37	2	20	3	46	2	95	6	110	10	131	13	175	11	147	11	91	9	86	6	1001	76
Paratyphoid Fever.	6	-	6	-	5	-	7	1	8	-	12	-	16	-	23	-	10	-	6	-	3	-	9	1	111	2
Erysipelas.	16	1	12	-	15	-	12	-	11	-	18	1	18	1	15	4	11	2	10	1	12	-	12	1	162	11
German Measles.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	3	-
Measles.	411	33	177	16	185	13	204	9	251	16	410	35	205	29	53	6	93	13	213	8	496	55	607	91	3305	324
Mumps.	162	-	114	-	164	-	90	-	87	-	34	-	55	-	54	-	37	-	8	-	4	-	4	-	813	-
Plague.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerperal Fever.	2	1	2	3	5	3	1	-	5	4	1	1	1	1	1	-	-	-	1	1	1	1	3	2	23	17
Relapsing Fever.	-	-	2	-	2	-	1	-	2	-	4	-	4	-	5	-	2	-	2	-	1	-	-	-	25	-
Scarlet Fever.	5	-	1	-	6	2	4	-	1	-	6	1	3	-	3	-	9	-	7	-	5	-	16	-	66	3
Small Pox.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1
Typhus.	7	-	2	-	4	-	7	-	9	1	7	-	10	-	9	-	9	-	9	-	5	-	5	-	83	1
Whooping Cough.	32	1	21	1	48	-	34	-	65	-	84	-	46	3	49	4	30	1	8	-	10	1	50	-	477	11
TOTALS.	778	41	448	24	557	22	478	14	792	28	853	53	601	52	519	29	612	33	616	26	927	69	1026	107	8207	498

INCIDENCE OF INFECTIOUS & CONTAGIOUS DISEASE OF A CHRONIC OR SPECIAL CHARACTER - 1927.

DISEASE.	JERUSALEM DISTRICT.		JAFFA DISTRICT.		HAIFA DISTRICT.		SAMARIA & GALILEE DISTRICT.		TOTAL FOR DISTRICTS.	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Anthrax.	2	-	1	-	2	-	1	-	6	-
Schistosomiasis.	8	-	10	-	1	-	25	-	44	-
Blackwater Fever.	1	-	-	-	11	2	2	-	14	2
Epidemic Ulcer.	-	-	-	-	19	-	-	-	19	-
Gonorrhoea.	23	-	5	-	342	-	-	-	370	-
Influenza.	50	5	127	10	94	1	13	1	284	17
Leprosy.	12	1	2	-	1	-	1	-	16	1
Encephalitis Lethargica.	-	-	-	-	5	4	1	1	6	5
Pneumonia.	239	194	171	132	76	30	80	35	566	391
Acute Poliomyelitis.	-	-	-	-	-	-	1	-	1	-
Tetanus.	7	6	19	15	8	5	3	2	37	28
Tuberculosis.	107	93	153	80	236	28	139	37	635	238
Syphilis.	599	1	31	1	257	2	12	-	899	4
Ankylostomiasis.	-	-	3	1	-	-	-	-	3	1
Undulent Fever.	13	1	-	-	-	-	-	-	13	1
Hydrophobia.	-	-	-	-	2	2	-	-	2	2
Dengue.	5	-	-	-	237	-	48	-	290	-
TOTALS.	1066	301	522	239	1291	74	326	76	3205	690

No cases have occurred of the following diseases:- Cholera, Glanders, Filariasis, Beri Beri, Pellagra and Actinomycosis.

VACCINATIONS - 1927.

	Results of Observations.	Towns.	Villages.	Persons entering Palestine.		Totals.
				Haifa Port.	Jaffa Port.	
Primary Vaccinations.	Successful.	10011	22820	-	38	32869
	Unsuccessful.	1505	2903	-	3	4411
	Not Observed.	4128	2845	-	10	6983
Re-vaccinations.	Successful.	1621	2366	134	655	4776
	Unsuccessful.	1006	641	126	3063	4836
	Not Observed.	33865	1251	224	385	35725
TOTALS.		52136	32826	484	4154	89600

(g) Malaria & Antimalaria Measures.

During 1927, there was, for the first time since the inception of civil government in 1920, a slight rise in the incidence of malaria. The increased incidence was limited to certain areas, notably the coastal plain from Jaffa to Ras en Naqura, the Emek from Haifa to Beisan and the Jordan valley from Beisan northwards. In other parts of Palestine, particularly in the southern section of the country, there was rather less malaria than in previous years.

The increased incidence resulted from the heavy rainfall at the end of the preceding winter. The probability of a bad malaria year was foreseen and early in March the Department issued a warning circular to all Medical Officers urging them to carry out intensive anti-larval measures where necessary and to obtain early information of an undue prevalence of malaria in any village in order to enable them to take appropriate steps to prevent epidemics of the disease.

The following figures indicate the greater amount of malaria as compared with previous years:-

(a) Spleen Rate.

Town School Children.

Year.	No. of Towns.	No. of children examined.	No. of children with enlarged spleen.			Spleen Rate.
			Slight.	Moderate.	Great.	
1925	17	6549	254	51	6	4.6%
1926	18	10971	146	35	5	1.7%
1927	19	10647	295	34	5	3.1%

Village Children.

Year.	No. of Villages.	No. of children examined.	No. of children with enlarged spleen.			Spleen Rate.
			Slight.	Moderate.	Great.	
1925	541	33,685	2685	1083	277	12%
1926	563	37,672	2248	1144	326	9.9%
1927	526	36,917	2005	938	393	9.1%

./.

(b) Percentage of malaria cases among dispensary patients.

Year.	Total No. of Dispensary Patients.	No. of patients suffering from malaria.	Percentage of malaria patients.
1922	283,156	20,297	7.17
1923	270,945	13,280	4.90
1924	285,215	11,732	4.12
1925	344,150	7,835	2.27
1926	388,729	7,956	2.04
1927	394,932	9,069	2.29

In certain of the affected areas the increase in the malaria incidence started in 1926. Thus, in Tiberias the percentage of malaria cases among dispensary patients which during the years 1923, 1924 and 1925 had been 3.6%, 3.7% and 3.5% respectively, rose in 1926 to 6.6% and in 1927 to 9.35% while the November spleen rate of school children in the town rose from 2.1 in 1925 to 6.8 in 1926 and 19.1 in 1927.

The areas of increased malaria incidence corresponded closely with the areas of Jewish agricultural settlement. Although the majority of the settlers were from non-malarious European countries and were therefore much more liable to severe infections and to blackwater fever than the indigenous population, there was no case of blackwater fever and only one death from malaria among them during the year. The contrast with what happened in the early days of Jewish colonization in Palestine is very striking. Then, malaria and blackwater fever were rife among the newly settled immigrants and many settlements had to be abandoned on account of the severity of the diseases.

Routine anti-larval measures have continued as in previous years. In the early spring, attempts were made to get minor drainage work in the vicinity of villages carried out under the newly enacted Village Roads and Works Ordinance. It was soon found, however, that the Ordinance was useless owing to difficulties in its practical application and, as in former years, the performance of the work had to depend on the good-will and common sense of the villagers. A number of Government Sub-Inspectors were appointed specifically for work in the Jewish colonies and they took over several of the areas previously supervised by the Malaria Research Unit, thereby enabling a considerable reduction in the staff of the Research Unit to be made. Satisfactory progress was made with the mosquito-proofing of the rainwater cisterns in the hill villages and there are now comparatively few of these cisterns which are not fitted with iron doors of a suitable type.

./.

At the end of the year there were 26,933 possible breeding places on record in the villages and 13,935 of them had been permanently mosquito-proofed, while in the towns there were 73,192 such places of which 33,701 had been permanently dealt with. 930 pumps were fitted. 746,755 "oilings" were carried out for which purpose 66½ tons of Solar Oil were expended. Paris Green was extensively used and, when applied by well trained men, proved a very satisfactory and effective larvicide. Stoxol was employed experimentally as a larvicide, but gave poor results.

Active breeding of *Anopheles bifurcatus* in three of the large cisterns of the Mosque of Omar, Jerusalem, was discovered towards the end of January. The cisterns had not been inspected for six weeks (as the inspectors had been taking part in an urgent vaccination campaign) and the sealed covers of the cistern openings had been removed. The mosquitoes were emerging from the cistern openings in large numbers and blood-filled females were found in the neighbouring houses. *A. bifurcatus* has now been found actively breeding in Jerusalem in every month of the year so that the suggestion put forward some years ago that there were only two or three broods a year of this mosquito, has been disproved and the necessity for anti-mosquito measures in the winter as well as in other seasons of the year, has been demonstrated.

Anopheles pharoensis was found breeding profusely in Birket Ramadan and in smaller numbers in open marshes at Wadi Rubin and at Shuneh in the Jordan Valley, in October and November. Previously *A. pharoensis* was considered a rare mosquito in Palestine.

Anopheles elutus was found in stables in Acre and in the Government Stud Farm near Acre in both of which places there had been an increased amount of malaria. In Acre, only *A. bifurcatus*, breeding in the wells of the town, had been previously found and it had been thought that malaria at the Stud Farm was due to *A. superpictus* or *A. sergenti* from the irrigation channels of the neighbouring gardens. The swamps of the Namein River are the nearest *A. elutus* breeding places and their elimination will probably remove malaria from the neighbourhood of Acre.

Anopheles superpictus and *A. sergenti* were found breeding prolifically in all running streams and wadis. Ordinary methods of canalization and clearance of vegetation merely reduced the amount of breeding but, unless supplemented with Paris Green control, did not eliminate it. *A. superpictus* predominated in the spring and summer months and *A. sergenti* in the late autumn and winter.

Larvae of *Anopheles hyrcanus* were found in large numbers in all stagnant swamps while those of *A. algeriensis* were usually found in swamps where the water had a slight flow. Neither of these mosquitoes are at present considered to carry malaria in Palestine.

Breeding places of *Anopheles multicolor* were found only rarely. This mosquito breeds in stagnant and often slightly brackish water.

./.

Of the larger drainage schemes started during the year that in the Kishon area is the most important. The scheme was undertaken by Government to mitigate to some extent the evil effects of unemployment. It has as its object the drying of the worst part of the Kishon marshes and the elimination of malaria from an area east of Haifa. Malaria in this area was a menace to the health of the town and was retarding agricultural and other development in the neighbourhood. The scheme was originally proposed by the Malaria Survey Section and its estimated cost is £E.22,000. It involves the filling of a number of unnecessary stream beds and pools with approximately 100,000 cubic metres of sand transported from the dunes north of the Kishon River, the construction of earth banks to prevent back-flooding from the Kishon at high water and the construction in concrete of a main drainage canal with subsidiary channels to carry off the water discharged from numerous springs in the area and to deal with the discharge of surface and storm water during the rainy season.

The Haifa Bay Development Company which had started drainage and reclamation operations to the north and north east of the Kishon area dealt with by the Government scheme, discontinued their work on account of lack of funds.

The Palestine Jewish Colonization Association continued slowly the work of reclamation of the Kabbara swamps which began in 1924. A scheme for settlement of part of the reclaimed Kabbara lands by a Small Holdings Promotion Company, was started but was subsequently abandoned as it was thought to be premature.

The Wadi Musrara near Tel Aviv was carefully surveyed by the Malaria Research Unit and a permanent drainage scheme prepared. As, however, mosquito breeding in the wadi was effectively controlled by means of Paris Green, it was considered unjustifiable to proceed with an expensive drainage scheme until the area becomes more developed and, in any case, the settlements which had agreed to provide the bulk of the money, found themselves unable to do so.

The Moslem Supreme Council agreed to the proposals put forward by the Malaria Survey Section, for dealing with the Wadi Rubin and the springs and extensive marshes along the wadi banks, and would have commenced work on this important scheme had not the earthquake necessitated the expenditure of their funds on other objects. It is satisfactory to record that work on the scheme has since been started.

The Palestine Electric Corporation started the construction of a large hydro-electric plant at Jisr el Majami in the valleys of the Jordan and Yarmuk. As the area was intensely malarious and as the field of operations was partly in Palestine and partly in Transjordan, the Departments of Health of the two countries were asked by the Corporation to undertake the malaria control measures at its expense. Anti-larval measures were necessary over an area of approximately 160 square kilometres in order adequately to protect the Corporation's camp of 250 men. In Transjordan, after a rapid engineering survey of the irrigation systems originating from the Wadi 'Arab and Yarmuk, work was started early in March on some 28 kilometres of the main canals. The canals which were public property and had not been repaired for many years, were dug out, repaired, straightened and re-graded and sluice gates were fixed where necessary. The pools and marshes which had formed along the canals as the result of many years of neglect and which were prolific breeding grounds for mosquitoes, were eliminated.

When the main canals were completed irrigation was controlled by means of the sluice gates and the occupiers of the land were made to put their subsidiary irrigation channels in order.

The area also contained very numerous springs and seepage areas along the banks of the Wadi 'Arab and Yarmuk. These were drained, regulated and Paris Green was employed as a larvicide.

On the Palestine side of the Jordan, the work was carried out by the Malaria Research Unit where the Wadi Bireh and Wadi Fijjas with their mill and irrigation channels required much attention.

All the Palestine Anophelines with the exception of *A.bifurcatus* were found in the area.

There were 1 malaria infection in September, 16 in October and 11 in November. The protection afforded therefore was satisfactory in view of the very malarious nature of the district and of the fact that in 1927 there was a higher malaria incidence than usual among the population surrounding the controlled area. The work terminated at the end of November, at the request of the Corporation.

Among the more important of the minor reclamation schemes may be mentioned the work carried out by the German Hospice at Tabgha and the drainage work at Tel el Mutesellim (Megiddo).

At Tabgha on the northern shore of Lake Tiberias a large part of the marsh was filled with shingle and planted with trees and a stretch of the lake shore protected by a wall.

At Tel el Mutesellim, the work started in 1926 was completed under the supervision of the Malaria Survey Section. Four springs were canalized and a considerable area dealt with by means of sub-soil tile drainage.

Much work was done to the north of Lake Huleh, particularly as regards the control of irrigation canals but the area remained so malarious that the schools in the villages of Khalasa, Damshun and Salhiye had to be closed as they could not be kept staffed with teachers.

Summaries of the work of the Malaria Survey Section provided by the International Health Division of the Rockfeller Foundation and of that of the Malaria Research Unit provided by the Jewish Joint Distribution Committee of New York are given in Appendices 1 and II.

ANTIMALARIA STATISTICS FOR THE YEAR 1927.

Towns of Palestine.

Month.	No. of fresh possible breeding places discovered.				No. of Places.							No. pf prosecutions.	No. of kilos of Solar Oil used.	No. of kilos of Crude Oil used.
						Breeding								
	Wells.	Cisterns.	Cesspits.	Other Places.	Inspected.	Anopheles.	Culex.	Anopheles and Culex.	Oiled.	Made mosquito-proof by sealing, covering or other means.	To which pumps fitted.			
January.	2	49	484	620	120278	14	475	6	44353	1300	157	38	2159	255
February.	1	48	110	226	132686	14	489	5	49038	1007	76	40	2220	252
March.	2	13	13	40	151451	26	687	6	55384	454	39	57	2849	48
April.	26	33	132	103	146864	20	868	2	56903	764	45	80	2987	116
May.	13	80	466	503	159610	23	1230	5	60932	1363	68	39	3547	90
June.	6	54	571	229	149602	33	1430	47	57567	1171	45	55	4270	49
July.	9	27	491	290	148911	44	1840	19	56331	1677	31	40	4618	45
August.	66	12	701	462	159035	29	1515	13	58408	2118	93	46	4789	47
September.	13	19	41	58	156616	40	1739	11	59459	424	335	117	4932	52
October.	9	58	344	167	159429	22	2006	8	53534	846	10	43	4936	63
November.	24	46	329	227	153441	26	1646	9	53618	395	26	37	4592	54
December.	5	20	13	75	107199	21	703	5	45035	102	1	29	3330	43
TOTALS.	176	459	3695	3000	1745062	312	14628	136	650562	11621	926	622	45229	1114

ANTIMALARIA STATISTICS FOR THE YEAR 1927.

Villages of Palestine.

Month.	No. of visits to villages.	No. of new wells and cisterns found.	No. of other new possible breeding places found.	No. of places in which mosquito larvae found.	No. of places oiled.	No. of places closed, repaired and made mosquito proof.	No. of persons treated with quinine.	No. of prosecutions.	No. of kilos of crude oil used.	No. of kilos of Solar oil used.	Grammes of quinine expended
January.	1297	107	13	559	17644	329	127	145	-	1707	650
February.	1039	108	17	477	15036	588	78	130	-	1455	1455
March.	1298	204	78	488	17676	860	65	41	-	1631	396
April.	1210	166	53	599	16833	472	94	53	-	1497	480
May.	1241	121	22	755	17784	857	53	224	-	1922	476
June.	1304	125	32	635	18422	451	51	314	-	2304	312
July.	1218	144	80	358	17172	684	244	330	-	2267	978
August.	1236	149	373	509	15000	308	451	237	-	1613	2430
September.	1306	220	9	468	15088	993	377	198	-	1832	2186
October.	1338	35	24	423	17009	268	308	149	6	1843	1443
November.	1289	26	673	411	14759	93	198	64	6	1734	836
December.	1249	21	1	399	13770	4	147	149	7	1550	1024
TOTALS.	15025	1426	1380	6081	196193	5907	2193	2034	19	21355	12666

(h) Rabies.

Two deaths from hydrophobia occurred. Deaths in previous years were 13 in 1923, 9 in 1924, 3 in 1925 and 1 in 1926. Treatment with carbolized vaccine is available at eleven centres throughout the country. In addition supplies of the anti-rabic vaccine are provided to selected practitioners in rural areas so that there may be as little delay as possible in commencement of treatment and that bitten persons may have the facility of treatment as near as possible to their homes.

The Veterinary Service of the Department of Agriculture, the Police and the Municipal Authorities each in their particular sphere conduct measures for the reduction of the numbers of pariah dogs, jackals and other animals throughout the country. The table which follows summarises the activities of these authorities. In several areas the Society for the Prevention of Cruelty to Animals deals in a proper manner with the disposal of stray or out-cast domestic dogs.

788 bitten persons received advice or treatment during the year. 75 of these had been bitten by definitely proven rabid animals.

III. MEDICAL SECTION.

(a) Government and Municipal Hospitals.

During 1927 no progress was made in the development of the hospital committee system which was introduced in 1924. Further progress is impossible until the finances of the Municipalities are controlled and put on a sound basis. Municipal contributions to the funds of the hospital committees have steadily decreased since the system started four years ago and last year certain of the Municipalities could not have paid their contributions had not Government given them grants-in-aid for the purpose. The cost of maintenance of the five Municipal Hospitals of Jaffa, Nablus, Gaza, Acre and Beersheba amounted to approximately £P.12,900. of which £P.6800 were paid by the Department of Health, £P.3000 by the Municipalities and £P.3000 were received as patients' fees.

At Beersheba owing to the destitution consequent on a severe drought, both hospital fees and municipal revenue were so reduced that the Department had to bear practically the whole cost of the hospital during the latter half of the year, while at Nablus the earthquake in July caused an increase in the work of the hospital with which the funds of the Committee were insufficient to cope.

The need for improvement, completion or extension of a number of the hospital buildings became acute, particularly to allow of proper accommodation for infectious cases, and Government sanctioned grants-in-aid for the purpose of £P.5650 to Jaffa, £P.2750 to Gaza and £P.850 to Beersheba; but by the end of the year the work had not been put in hand. At Acre structural alterations were carried out in the hospital which allow of five additional beds for sick prisoners.

In Jerusalem and Haifa the Department continued to maintain hospitals without municipal cooperation.

A newly completed building near the Government Hospital Jerusalem, was rented as a Nurses Home and some twenty members of the nursing staff were transferred to it from their old and unsatisfactory quarters.

A valuable X-Ray set, the gift of Mr. C.F. Loesch of Chicago, was installed in a suitable section of the hospital but owing to delay in the arrival of the generating plant ordered through the Crown Agents, the X-Ray set was unfortunately not in operation at the end of the year.

A series of rooms adjacent to the main hospital building which previously were used as a laundry, were remodelled and converted into a fever block with accommodation for eight patients.

./.

Special wards for the accommodation of sick women and children of the British Community in Palestine were nearing completion at the end of the year and are to be placed under the charge of the newly appointed Specialist Surgeon.

At the Government Hospital, Haifa, also, two wards each of two beds, with sitting room, bath rooms etc. were being prepared as first class accommodation for women and children.

The following are the numbers of patients admitted to the Government and Municipal Hospitals during the past seven years:

Year	1921	1922	1923	1924	1925	1926	1927
Patients	6602	6646	4905	4442	3939	4289	5048

2 Royal Air Force personnel, 113 British and 519 Palestinian police, 236 railway employees, 316 other Government employees and 322 prisoners received 14,420 days treatment in Government and Municipal Hospitals. In addition, 1029 prisoners suffering from minor or chronic ailments were treated in the Sick Detention Wards of the Central Prisons and 38 prisoners suffering from tuberculosis in the Tuberculosis Section of the Acre Central Prison.

(b) Government Dispensaries.

There were the same number of Dispensaries and Medical Inspection Rooms viz: 14 of the former and 5 of the latter, as in 1926.

75,905 new patients were treated as compared with 68,860 the previous year. Attendances at Dispensaries and Inspection Rooms during the past six years have been:

Year.	1922	1923	1924	1925	1926	1927
Attendances.	173,351	162,827	189,975	219,281	135,737	146,140

The figures for 1926 and 1927 do not include attendances at the Ophthalmic Clinics which numbered 108,000 nor do they include more than 4000 attendances at the clinic for Syphilis at Hebron.

The dispensary treatment of leprosy has proved rather disappointing. Twelve patients were under treatment but owing to the irregularity with which they attended and to the fact that none completed a full course of treatment, no patient was cured or showed much improvement. Apart from cases in the Leper Home, there are only about 34 lepers in the country of whom not more than 20 are suitable cases for dispensary treatment.

423 village clinic sessions were conducted by the Medical Officers in 44 villages. The number of attendances was 7984 as compared with 14,227 the previous year. There

were 6721 new patients of whom 278 were treated for malaria, 1423 for eye diseases and 5020 for other conditions. The clinic at Auja el Hafir in the south of the Beersheba sub-district which was opened in 1926 for the benefit of the Bedouin tribes proved its usefulness. The Medical Officer of Beersheba also made frequent visits to the tribes and in an inspection of the persons living in 1023 tents (an average of 5 persons per tent) found 42 cases of malaria, 7 of tuberculosis, 127 of eye diseases, 71 of skin diseases, 2 of measles and 110 of other diseases.

(c) Voluntary Hospitals and Clinics.

No new hospitals were opened during the year but there was a small increase in the bed-strength of some of the Jewish hospitals.

28,369 patients were admitted as compared with 25,913 in 1926, 26,369 in 1925 and 23,409 in 1924.

The detailed figures of the work done by each hospital will be found in the appropriate table but the following summary is of interest in indicating the relative activity of the various groups of hospitals and clinics.

Voluntary Hospitals and Clinics, 1927.

	Bed Strength.	Admissions of in-patients.	Attendances of out-patients.
Jewish Hospitals and Clinics.	615	15,121	835,704
Christian Hospitals and Clinics:			
British.	488	6,572	180,799
French.	360	4,019	89,350
German.	107	1,934	17,948
Italian.	90	723	11,829
Others.	-	-	5,898
Moslem Clinics.	-	-	1,179
	1660	28,369	1,142,707

Of the 28,369 patients treated in the voluntary hospitals 7,290 were Moslems, 4,416 Christians, 16,660 Jews and 3 belonged to other religions. Thus about 1 in every 90 of the Moslem population, 1 in every 17.5 of the Christian and 1 in every 9 of the Jewish population entered one or other of the voluntary hospitals during the year.

./.

In addition to the 1,142,707 out-patient attendances at the hospitals and dispensaries in the towns, there were 501,355 attendances at the clinics established throughout the Jewish rural settlements and in one or two of the Arab villages, as is shown by the following figures.

Village Clinics conducted by Voluntary.
Organizations, 1927.

÷ ÷ ÷

	No. of Clinics.	Total attendances.	New patients.	Malaria.	Eye Diseases.	Other Diseases.
Hadassah Medical Organization.	27	170,252	31,029	3,478	4,320	23,231
Kupat Cholim.	42	247,557	60,568	2,223	4,349	53,996
Colony Committees.	14	77,073	19,627	1,313	5,258	13,056
Church Missionary Society.	2	6,473	2,270	19	542	1,709
	85	501,355	113,494	7,033	14,469	91,992

The number of dispensary and clinic attendances which tends to increase each year, could readily be reduced from its present enormous figure without any appreciable loss to the health of the country.

A sum of not less than £P.200,000 a year is spent from Jewish, Christian and Government sources on medical relief for the Jewish population which numbers about 148,000 persons while on the remainder of the population, numbering approximately 730,000, the expenditure on medical relief is only about £P.70,000 a year. If expenditure on the whole population were to be at the same rate as that on the Jewish section, there would be required annually nearly a million and a quarter pounds - a sum far in excess of what Palestine and the various foreign bodies which contribute to medical work in Palestine, can afford. Even for the Jewish work, for which the bulk of the money is contributed from Jewish sources in America, there was difficulty in maintaining the necessary funds and repeated requests were made to Government for direct financial assistance. Government considered that a large reduction in the recurrent expenditure on Jewish medical work was called for and was possible. It was, however, thought essential to complete the building of a new general hospital to serve the large Jewish population of Tel Aviv and neighbourhood. The building of the hospital had been started by the Tel Aviv Township which had received assistance in the form of a large loan from the Hadassah

Medical Organization. Owing to its heavy financial liabilities the Township had abandoned the construction of the hospital. Government, therefore, agreed in principle to complete the building subject to certain conditions and the Hadassah Medical Organization generously converted their loan into a gift to the Township. The negociations were rather protracted so that at the end of the year the completion of the new hospital had not been started and hospital work in Tel Aviv was still being carried on in unsatisfactory rented buildings.

In the German Deaconess Hospital in Jerusalem an X-ray plant was installed and special arrangements for helio-therapy made.

Progress was made with the building of the Schweitzer Hospital at Tiberias which will be conducted by the Hadassah Medical Organization and will accommodate 30 medical cases.

The Convalescent Home of the Kupat Cholim at Motza, which does valuable work in caring for Jewish workmen and women who are not fit to return to work after discharge from hospital, was considerably extended by the addition of a first floor.

The Palestine General Hospital of the Royal Air Force and the Church Missionary Society's Hospital at Jaffa, rendered valuable and timely assistance to many of the earthquake victims from Ramleh and Lydda.

(d) Training of Nurses.

The nursing staffs of the various hospitals of Palestine consisted of 30 Hospital Matrons, 140 trained nurses, 144 nurses under training and 160 nurses not under training. Many of the nurses not under training are sisters of various religious orders while a number are probationer nurses in hospitals which are not officially recognized as training hospitals.

The Hadassah Medical Organization which maintains the largest school for Nursing in Palestine, introduced an obligatory course in midwifery into its nurses curriculum, a post-graduate course in Health Welfare and a short course for the training of male orderlies.

Examinations in nursing were held in April and October and the following are the numbers of successful candidates:-

	1st Year.	2nd Year.	3rd Year.
Government and Municipal Hospitals.	10	9	6
Hadassah, Rothschild Hospital.	22	28	19
Church Missionary Society's Hospitals.	1	4	1
Scottish Mission Hospital.	2	-	-
Edinburgh Medical Mission Hospital.	-	2	2
London Jews Society's Hospital.	-	2	1
St. Luke's Hospital.	1	1	-
	36	46	29

Since 1920, 156 nurses have been trained and obtained their certificates from hospitals in Palestine and have been registered by Government.

NAMES OF ORGANIZATIONS.	Bed Strengths.	Matrons.	Trained nurses.	Nurses under training.			Nurses not under training.	TOTALS.
				1st Year	2nd Year	3rd Year		
GOVERNMENT AND MUNICIPAL HOSPITALS.	271	6	20	11	13	10	15	75
VOLUNTARY HOSPITAL ORGANIZATIONS.								
Hadassah Medical Organization.	363	5	24	23	22	20	85	180
Church Missionary Society.	183	4	6	6	4	3	6	29
Kupat Cholim (Jewish Medical Organization).	89	1	12	-	1	-	11	25
Tutors and Protectors of the Jewish Community in the Holy Land, Amsterdam.	53	1	1	-	-	-	11	13
Mizgab Ladakh (Private Donation).	36	1	6	1	3	2	-	13
Bicur Cholim Society.	74	1	3	25	-	-	-	29
Italian Hospital, Jerusalem.	60	1	13	-	-	-	-	14
London Jews Society.	70	1	4	3	1	2	-	11
The Order of St. John of Jerusalem in England.	45	1	2	1	-	-	2	6
International Moravian Church, London.	60	1	4	-	-	-	-	5
German Deaconness Hospital, Jerusalem.	60	1	7	1	7	-	-	16
German Temple Society, Jaffa.	20	1	2	-	-	-	-	3
Jerusalem and the East Mission.	30	1	1	-	1	3	2	8
Italian Association, Haifa.	30	1	2	-	-	-	-	3
St. Charles Congregation, Haifa.	27	1	4	-	-	-	-	5
Edinburgh Medical Mission Society.	40	1	5	4	-	2	-	12
United Free Church of Scotland.	60	1	5	2	3	-	1	12
Ezrath Nashim Women's Society Home for Insane and Incurable.	50	-	15	-	-	-	15	30
French Hospitals.	366	6	24	2	1	-	27	60
TOTALS. Voluntary Hospitals.	1716	30	140	68	44	32	160	474

GENERAL AND INFECTIOUS.

Location of Hospital.		Bed Strength.	Admissions.					Deaths.	Dis-charges.	Daily average in Hospital.
			Moslems.	Christians.	Jews.	Other Religions.	Total.			
Jerusalem.	Government.	68	630	271	80	-	981	86	883	40.17
Haifa.	"	25	426	172	541	2	1141	31	1097	31.83
Acre.	Municipal.	15	331	95	41	12	479	28	443	15.20
Jaffa.	"	40	580	98	208	-	886	55	824	25.88
Gaza.	"	18	404	10	3	-	417	12	409	10.97
Beersheba.	"	8	278	5	4	-	287	12	265	6.75
Nablus.	Watan.	25	805	48	4	-	857	65	783	32.85
TOTALS.		199	3454	699	881	14	5048	289	4704	23.38

PRISON SICK DETENTION WARDS.

Location of Hospital.	Bed Strength.	Moslems.	Christians.	Jews.	Other Religions.	Total.	Deaths.	Dis-charges.	Daily average in Hospital.
Jerusalem.	14	176	9	24	-	209	-	210	5.00
Acre.	-	761	31	24	4	820	-	817	24.16
TOTALS.		937	40	48	4	1029	-	1027	14.58

GOVERNMENT DISPENSARIES AND CLINICS EXCLUSIVE OF OPHTHALMIC & OTHER SPECIAL CLINICS - 1927.

Location.	Total Number of attendances.	New Cases.							
		Total new cases.	By Diseases.			By Religions.			
			Malaria.	Eye Diseases.	Other Diseases.	Moslems.	Christians.	Jews.	Other Religions.
Jerusalem Dispensary.	15092	10710	37	118	10555	6477	2464	1769	-
Ramallah. "	383	327	7	40	280	207	116	4	-
Hebron "	6237	4408	17	213	4178	4215	121	72	-
Beersheba "	20982	4856	155	136	4565	4644	182	30	-
Jaffa "	17776	9374	141	678	8555	8820	299	255	-
Ramleh "	15757	5758	39	-	5719	4576	1031	151	-
Gaza "	3810	3447	49	-	3398	3122	298	27	-
Majdal "	8610	4628	3	682	3943	4445	180	3	-
Haifa "	8608	7421	498	394	6529	3548	2000	1873	-
Acre "	4978	3957	594	50	3313	2740	917	202	98
Nablus "	15967	3221	37	-	3184	3146	50	5	20
Tulkarem "	9808	4056	-	-	4056	3900	155	1	-
Jenin "	3464	3101	54	462	2585	2928	170	3	-
Beisan "	8024	6698	54	898	5746	5787	719	192	-
Kantara Railway Medical Inspection Room.	3235	1460	9	179	1272	907	548	5	-
Nazareth Medical Inspection Room.	1417	952	14	-	938	468	434	50	-
Tiberias " " "	800	537	90	50	397	325	95	114	3
Safad " " "	950	816	46	53	717	697	94	25	-
Bethlehem " " "	242	178	-	12	166	93	85	-	-
TOTALS.	146140	75905	1844	3965	70096	61045	9958	4781	121

Name and Location of Hospital.	Bed Strength	Admissions.					Deaths.	Dis-charges.	Daily average in Hospital	Remarks.
		Moslems.	Christians.	Jews.	Other Religions	Totals				
JERUSALEM.										
Ophthalmic Hospital of the Order of St. John of Jerusalem.	45	1192	158	24	-	1374	-	1386	38.50	
St. Louis (French) Hospital.	150	523	748	4	-	1275	44	1233	43.83	
Italian Hospital.	60	320	106	11	-	437	12	425	16.25	
Rothschild (Hadassah) Hospital.	125	17	2	3037	-	3056	176	2826	119.66	
English Mission Hospital (London Jews Society).	70	27	62	1101	-	1190	8	1174	50.00	10 months.
Shaare Zedek Hospital.	53	6	2	1137	-	1145	129	992	42.33	
Mizgeb Ladach Hospital.	36	2	-	564	-	566	25	537	19.66	
Bicur Cholim Hospital.	74	2	3	1219	-	1224	96	1134	64.26	
Leper Hospital (International Moravian Society).	60	7	-	5	-	12	1	6	28.75	
Deaconess (German) Hospital.	60	435	692	65	-	1192	60	1146	36.82	
Convalescent Home, Motza.	31	-	-	210	-	210	-	181	31.15	5 months.
BETHLEHEM.										
French Hospital.	70	260	513	-	-	773	13	751	30.25	
HEBRON.										
Church Missionary Society's Hosp.	18	122	1	-	-	123	3	116	9.60	6 months.
JAFFA.										
Hadassah (Tel Aviv) Hospital.	125	2	-	4130	-	4132	212	3930	122.01	
Church Missionary Society's Hosp.	57	-	-	-	-	691	9	679	19.60	11 months.
German Hospital.	20	4	85	5	-	94	2	90	2.87	
French Hospital.	90	1087	186	50	-	1323	68	1276	43.49	
GAZA.										
Church Missionary Society's Hosp.	63	-	-	-	-	305	5	296	18.39	11 months.

VOLUNTARY HOSPITALS - 1927 (Continued).

Name and Location of Hospital.	Bed Strength	Admissions.					Deaths.	Dis-charges.	Daily average in Hos-pital.	Remarks.
		Mos-lems.	Chris-tians.	Jews.	Other Reli-gions	Totals				
HAIFA.										
St. Luke's (Jerusalem and the East Mission) Hospital.	30	192	221	44	1	458	14	439	13.04	
Hadassah Hospital.	47	6	1	2131	-	2138	89	2053	51.11	
German Hospital.	27	130	196	321	1	648	12	628	19.08	
Italian Surgical Hospital.	30	144	95	47	-	286	4	283	14.33	
NABLUS.										
Church Missionary Society's Hosp.	45	524	52	-	1	577	17	566	18.60	11 months.
NAZARETH.										
Edinburgh Medical Mission Hospital.	40	681	294	8	-	983	47	942	32.42	11 months.
French (Soeurs de Charité) Hospital.	50	376	270	2	-	648	17	633	18.58	
TIBERIAS.										
United Free Church of Scotland Hosp.	60	-	-	-	-	859	37	795	40.00	9 months.
SAFAD.										
Hadassah Hospital.	66	75	29	893	-	997	57	949	61.03	
AIN HAROD.										
Kupat Cholim Hospital.	58	1	-	1652	-	1653	15	1638	41.50	
TOTALS.	1660	6135	3716	16660	3	28369	1172	27104	37.46	

VOLUNTARY DISPENSARIES & CLINICS – 1927.

Name of Dispensary or Clinic.	Total attendances.	Number of New Patients.								Remarks.
		Totals	By Diseases.			By Religions.				
			Malaria.	Eye Diseases	Other Diseases	Moslems	Christians	Jews.	Other Religions.	
JERUSALEM.										
Ophthalmic Hospital of the Order of St. John of Jerusalem.	85681	19988	-	19988	-	13015	3669	3304	-	
St. Louis (French) Hospital.	33354	15984	62	2758	13164	8245	6174	1565	-	
Italian Hospital.	5580	2452	1	10	2441	1476	617	359	-	
Rothschild Hospital (Hadassah).	124583	25596	894	3884	21418	242	172	25182	-	
English Mission Hospital (London Jews Society).	31944	13314	4	3184	10126	325	1036	11953	-	
Shaare Zedek Hospital.	23648	16252	-	-	16252	651	98	15503	-	
Misgab Ladach Hospital.	13313	7636	-	554	7082	302	12	7322	-	
Old Bicur Cholim Hospital.	2127	1880	-	-	1880	-	-	1880	-	
New Bicur Cholim Hospital.	17118	5889	-	-	5889	-	-	5889	-	
German Deaconness Hospital.	15471	7278	-	365	6913	3467	1639	2172	-	
Armenian Convent Dispensary.	2101	1011	-	24	987	-	1011	-	-	
Kupat Cholim Dispensary.	23622	9783	-	-	9783	-	-	9783	-	
Moslem Polyclinic.	1179	922	29	27	866	922	-	-	-	
Ezrath Nashim Home.	752	241	-	-	241	-	-	241	-	
RAMALLAH.										
Soeurs de St. Joseph (French).	1362	1210	2	497	711	795	415	-	-	
BETHLEHEM.										
French Hospital.	13207	4594	-	2312	2282	1966	2628	-	-	

VOLUNTARY DISPENSARIES & CLINICS - 1927 (Continued).

Name of Dispensary or Clinic.	Total attendances.	Number of New Patients.									Remarks.
		Totals	By Diseases.			By Religions.					
			Malaria.	Eye Diseases	Other Diseases	Moslems.	Christians.	Jews.	Other Religions.		
HEBRON.											
Church Missionary Society's Hosp.	12845	3219	-	1240	1979	3175	20	24	-		
Hadassah Dispensary.	7977	2764	15	1000	1749	1602	-	1162	-		
JAFFA.											
Church Missionary Society's Hosp.	14597	6932	-	692	6240	-	-	-	-		
Hadassah Hospital.	92598	18170	104	3740	14326	2	-	18168	-		
French Hospital.	23952	1732	10	573	1149	1732	-	-	-		
Kupat Cholim Dispensary.	199404	51060	534	9829	40697	896	-	50164	-		
St. Georges' Dispensary.	3797	2319	225	114	1980	853	1464	-	2		
Jewish Medical Organization Neve Shalom Dispensary.	11232	1759	-	357	1402	4	-	1755	-		
" " Neve Zedek "	26092	8298	2	1039	7257	-	-	8298	-		
Agoudat Israel Dispensary.	16809	4385	199	1228	2958	774	-	3611	-		
RAMLEH.											
Hadassah Dispensary.	648	309	1	107	201	239	5	64	1		Opened June
GAZA.											
Church Missionary Society's Hosp.	4393	2471	52	216	2203	2264	197	10	-		
HAIFA.											
St. Luke's (Jerusalem and the East) Hospital.	3000	1409	67	213	1129	471	712	104	122		
Hadassah Hospital.	61297	14707	90	4844	9773	231	63	14413	-		
Italian Hospital.	6249	2363	277	3	2083	961	498	852	52		

VOLUNTARY DISPENSARIES & CLINICS - 1927 (Continued).

Name of Dispensary or Clinic.	Total attendances.	Number of New Patients.								Remarks.
		Totals	By Diseases.			By Religions.				
			Malaria.	Eye Diseases	Other Diseases	Moslems.	Christians.	Jews.	Other Religions.	
HAIFA (Contd).										
Kupat Cholim Dispensary.	53689	13646	204	-	13442	-	-	13646	-	
German Hospital.	2477	2143	-	801	1342	935	876	305	27	
British Mission to the Jews Disp.	2864	1007	75	56	876	49	55	903	-	Closed May.
Soeurs de Charité (French) Disp.	11955	3214	832	573	1809	1915	1240	59	-	
NABLUS.										
Church Missionary Society's Hosp.	9639	3448	227	311	2910	-	-	-	-	
NAZARETH.										
Edinburgh Medical Mission Hosp.	7183	4770	863	897	3010	3090	1644	36	-	11 months.
French Hospital.	5520	4798	902	1432	2464	2785	2009	4	-	
TIBERIAS.										
Scottish Mission Hospital.	8653	2165	280	54	1831	-	-	-	-	9 months.
Hadassah Dispensary.	106875	17909	1592	4959	11358	2740	208	14961	-	
Kupat Cholim Dispensary.	9344	1835	119	93	1623	-	-	1835	-	
SAFAD.										
Hadassah Dispensary.	35401	4585	94	493	3998	404	18	4163	-	
BEISAN.										
Hadassah Dispensary.	9175	3580	69	998	2513	2803	504	273	-	
TOTALS.	1142707	319027	7225	69465	242337	59331	26984	219963	204	

(e) Maternity and Child Welfare.

Since the opening of the Princess Mary Maternity Wards of the Government Hospital in Jerusalem, the numbers of living babies born in the wards each year have been:-

Year.	1922	1923	1924	1925	1926	1927
No. of babies born.	55	111	170	196	267	316

None of the 316 babies died during its stay in the wards but there were 25 dead-births and of the 363 women admitted, three died.

The numbers of women trained as midwives have been:-

Year	1922	1923	1924	1925	1926	1927
No.of midwives trained.	3	11	9	15	15	18

A committee under the Supreme Moslem Council continued to support a number of beds for Moslem women in the Princess Mary Wards, and to select the Moslem pupil midwives and defray the cost of their training.

Owing to the expansion of the maternity work and in order to provide training for pupil midwives under the conditions they will meet in practice, a district maternity service, combined with the child welfare centre in Jerusalem, was started under the direction of the Superintendent of Midwives. A committee of ladies gave great assistance in this work and one of the committee generously provided the necessary building which is conveniently situated in the heart of the old part of the city.

The development of the maternity wards at Nablus has not materially progressed and no sustained attempt has been made there to undertake the training of midwives.

In addition to the women trained in the Princess Mary Wards, 19 nurses of the Hadassah Medical Organization obtained licences to practise midwifery and 11 midwives with foreign qualifications were granted licences.

Infant welfare work showed much progress during the year. Six new centres were opened and at the end of the year 31 centres were in existence. The amount of work performed by the centres is indicated in the following table but at present the quality and nature of the work performed shows considerable variation in different places. The following extract from the report of Mrs. E. Cotching M.D. who is in charge of the Haifa Infant Welfare Association's Centre gives a vivid picture of present conditions in Palestine and the difficulties to be overcome.

"Infant Welfare Centre
Government Hospital, Haifa."

"During the past year the work at the Infant Welfare Centre has made rapid strides as is seen in the table of monthly returns to the Public Health Department.

./.

The work is of a preventative nature; it is really a school for mothers and many of the mothers are mere children; more than one quarter of those on the books are under twenty years of age.

The object of the centre is to teach these mothers not only how to prevent their children dying, but how to keep them healthy and well, free from such diseases as diarrhoea; how to preserve their eyesight and how to save them unnecessary suffering. When once the mothers of Haifa can be convinced that this is possible and that most diseases and deaths of babies are due to their lack of knowledge, there will be a tremendous fall in the Infant Mortality and also healthier citizens in the future.

There are still many cruel practices carried out by some of the old women in this country as treatment for certain diseases such as burning the skin of the baby here and there and leaving open sores all over the body, putting lemon juice in the babies eyes, giving a male child's urine as a medicine to those suffering from measles. The practice of wearing charms "to keep away the evil eye" still persists and poor mothers pay as much as a pound for such a charm. Charms are also sold by certain people, which when worn by a woman who is unable to feed her baby in nature's way, are supposed to possess the power to enable her to do so.

When the work started twenty-two months ago the babies attending the Centre wore no napkins and a prize, in the shape of a garment for the baby, was offered for the mother whose baby had a clean napkin twelve attendances running. The prize has been awarded to several mothers.

As a sign of progress, when the Centre opened many mothers were very unwilling to have their babies' clothes removed because of the evil eye. Today there is no difficulty in this matter.

To encourage mothers to wean their babies at a proper age, milk has been supplied to the poorer mothers at this time.

It is gratifying that several local general practitioners have sent mothers to the Centre for instruction on how to wean and feed their babies.

The whole time nurse has devoted her time to visiting homes of babies who attend the Centre, going round with the Midwives who introduce her to the homes of newly born babies whose mothers she instructs, delivering leaflets on infant management to those who can read, and inviting mothers to bring their babies to the Infant Welfare Centre. Many of the homes are several kilometres from the hospital and too far away for mothers to attend. Mothers whose babies are sick she urges to go to a private practitioner or to a hospital without delay. Three afternoons a week she is in attendance at the Infant Welfare Centre.

During the year a course of lectures on Infant Welfare was given to a class of girls at the English High School. Since then some of the girls have been of practical use in the Centre taking charge of the charts, and helping to weigh the babies."

The valuable work of the Jewish Infant Welfare Centres is reflected in the lower infantile mortality of the Jewish section of the population as compared with that of other sections. The Hadassah Medical Organization maintained 17 Health Welfare stations throughout the country, which conducted a complete programme. 4863 expectant mothers were dealt with in their pre-natal clinics, 5062 babies attended the Infant Welfare Centres and 505 children of pre-school age were registered and cared for. For this work a staff of 26 qualified nurses with a number of assistants and voluntary workers, was maintained. In addition, two important Health Centres, the gift of Mr. Nathan Straus, are being constructed, one in Jerusalem and the other in Tel Aviv, under the supervision of the Hadassah Medical Organization.

So far infant welfare work has been limited to the towns and Jewish rural settlements; the large Arab village population of nearly half a million persons remains untouched but efforts were being made to establish, and nurses were being specially trained to conduct, village centres for infant welfare and health work.

The rise in infantile mortality from 163.03 to 200.46 serves to emphasize the great need that exists in Palestine for organized effort to protect infant life and health.

INFANT WELFARE - 1927.

Location and Supporting Organization.	No. of Infants cared for by Centre.	Attendances of Infants at the Centre.	Visits by Nurses to Infants' Homes.	Opened.
GOVERNMENT AND MUNICIPAL.				
Jerusalem. Government.	442	1790	1619	1925.
Ramleh. "	797	1910	2237	1926.
Gaza. "	388	805	2020	June 1927.
Hebron. "	40	42	131	Nov. 1927.
Acre. "	274	555	1131	1926.
Ramallah. Municipal.	59	2157	1778	1925.
Bethlehem. "	509	6726	1763	1926.
Nablus. "	174	1695	5184	1926.
HADASSAH MEDICAL ORGANIZATION.				
Jerusalem Station A.	576	3448	4327	1922.
" " B.	976	9079	3939	1924.
" " C.	817	6121	4238	1923.
" " D.	446	3232	2309	1923.
" " E.	48	1984	2120	1925.
" " F.	79	956	252	1925.
Haifa " A.	441	6441	1702	1923.
" " B.	628	6652	2226	1926.
" " C.	110	996	337	1926.
" " D.	29	133	81	Nov. 1927.
el Aviv. " A.	514	4470	1826	Feb. 1927.
" " " B.	75	569	1304	Oct. 1927.
Pethah Tiqva.	298	2397	1524	1924.
Rehovoth.	113	969	499	1924.
Shaaraim.	70	894	2379	1926.
Ein Gannim.	118	828	1244	1925.
Tiberias.	500	5845	5699	1924.
LOCAL COMMITTEES.				
Jaffa. Committee of Jaffa Ladies.	494	5256	1356	1926.
Haifa. Social Service and Infant Welfare Committee.	260	1999	4195	1925.
Jerusalem. American Colony Aid Association.	236	1591	1280	Apr. 1927.
Women's International Zionist Organization:				
(a) Jaffa. Kerem Hataymonim.	457	10964	2061	1926.
(b) Tel Aviv. Nordia.	873	17669	2166	1923.
(c) " " Neve Shalom.	755	10410	1796	1922.
TOTALS.	11596	118583	64673	

(f) Ophthalmic Service.

The six Government Ophthalmic Clinics at Gaza, Ramleh, Nablus, Tulkarem, Acre and Beersheba, continued to function under the expert supervision of the Warden and surgeons of the Ophthalmic Hospital of the Order of St. John of Jerusalem. The following table gives a detailed summary of the work performed by the clinics. As compared with 1926, there was an increase of more than 2000 new patients whose numbers reached 15,928. The increase is largely accounted for by the serious epidemic of acute conjunctivitis which occurred in the late summer. The total attendances - 108,437 - were not much greater than in 1926. In October, the Ophthalmic Nurses who since 1924 had been maintained by the Order of St. John were taken on the establishment of the Department of Health, but the Order still continued the training at its Ophthalmic Hospital in Jerusalem of Government Medical Officers and Nurses and during the year 4 Medical Officers, 3 Ophthalmic Nurses and 6 School Nurses attended the hospital for purposes of instruction.

Dr. W.E. Thompson, the Registrar of the Ophthalmic Hospital of the Order of St. John and, formerly, Senior Medical Officer of the Government Travelling Ophthalmic Hospital, left Palestine to take up an appointment in Persia. Acknowledgement must be made of the valuable services he rendered to ophthalmic work in Palestine and particularly of the assistance he gave in the organization and inspection of the Government Ophthalmic Clinics and of the ophthalmic treatment in schools.

The following extracts from the Report for 1927 of the Warden of the Ophthalmic Hospital of St. John indicate the amount of work carried out by the hospital, the relation of the hospital to the Government Ophthalmic Clinics, and the seriousness with which acute conjunctivitis in Palestine must be regarded.

"The number of new patients seen during the year 1927 was 20,051, and the total consultations 85,564. The number of patients admitted to Hospital was 1,391; and the number of operations performed 3,651. Classified according to religion of the new cases 12,998 were Moslems; 3,574 were Christians; and 3,479 were Jews. Of the total consultations 54,859 were Moslems; 14,307 were Christians; and 16,398 were Jews. The number of new patients is the largest yet recorded but the other figures show a slight decrease. The probability of this decrease has been mentioned in previous reports. On account of the activity of the Ophthalmic Clinics in different parts of the country, a large and increasing number of Trichiasis cases are dealt with in their own districts. Further, these clinics sort out and send on to us the intra-ocular cases. In this way the in-patient department of the Hospital deals with an increasing number of intra-ocular cases, and as these operations, all things considered, take longer to perform and the patients have to be retained longer in hospital, there is a corresponding

/fall in

fall in the number of operations performed and the number admitted to hospital. And this is as it should be if the country is to benefit to the maximum extent from the skilled staff and the well-equipped hospital of the Order. The year before the inauguration of the clinic scheme 66 per cent of our operations were for the relief of trichiasis. In 1927 this had fallen to 53 per cent and the intra-ocular operations had risen proportionately."

"..

Over 60 per cent of this "blindness" can be traced directly or indirectly, to acute conjunctivitis. This disease, although endemic or always present in the country, assumes epidemic form shortly after the onset of the hot weather and rages with ever-increasing virulence until the onset of the rains in November. The epidemic of 1927 was even more severe than that of 1926 (which was also a bad year). The acute cases numbered 4,291 and formed 21.4 per cent of the new cases. During the early months of the year the cases averaged about 60 per month; in May they increased to 101; June 273; July 487; August 1,115; September 906; October 639; November 408; December 194. The acute conjunctivitis was complicated with corneal ulceration in 752 cases. Of these 280 were perforating ulcers: a dreadful reinforcement to the kingdom of the blind, for the majority of these ulcers do not get to us until the damage is irreparable."

The measures taken for the prevention and early treatment of trachoma and acute conjunctivitis among school children are mentioned in the Section of this Report, which deals with the School Medical Service.

Each year more than 80,000 new ophthalmic cases are treated at the various hospitals and clinics and more than 60,000 school children are kept under medical observation or treatment for their eyes.

GOVERNMENT OPHTHALMIC CLINICS - 1927.

	Total Attendances.	No. of new patients.	No. admitted to Hospital.	Operations.		Clear Lids.	Acute Conjunctivitis.	Acute Conjunctivitis with corneal ulceration.	Trachoma.	Trachoma with corneal complications.	Corneal ulcers other than above.	Corneal conditions other than ulcers.	Endophthalmia.	V a r i a.	Blind in both eyes.	Blind in one eye.
				Trichiasis.	Other conditions.											
Ramleh.	30904	3335	5	363	91	377	1965	300	2958	863	147	812	325	860	98	219
Gaza.	13730	1392	38	192	282	219	661	33	1169	172	4	403	96	367	23	97
Acre.	12830	1065	17	13	8	532	589	11	438	95	11	36	27	139	6	18
Beersheba.	13222	1016	41	76	38	176	289	41	840	97	2	107	31	408	10	28
Nablus.	21462	4205	9	46	146	1979	1977	92	2204	826	58	302	21	212	42	24
Tulkarem.	16289	4915	-	409	793	355	1853	45	4560	1145	36	96	379	2889	59	201
TOTALS.	108437	15928	110	1099	1358	3638	7354	522	12169	3198	258	1756	879	4875	238	587

(g) Lunacy.

The problem which has arisen during the past few years, of providing sufficient mental hospital accommodation for Jewish insane, has remained acute.

In April there were 44 Arab and 114 Jewish lunatics requiring institutional treatment, but the two mental hospitals - the Government Mental Hospital at Bethlehem and the Jewish Ezrath Nashim Home for the Insane in Jerusalem - together provide accommodation for only 90 patients. Although both institutions had their nominal bed strength increased by ten beds and were further greatly overcrowded, there were still many violent cases which could not be admitted and which had to be confined in prison lock-ups and other unsuitable places.

The daily average number of patients in the Government Hospital was 57.25 which is 12 more than in 1926, and in the Ezrath Nashim Home was 76.4 or 5 more than in 1926.

A scheme for extending the Government Mental Hospital from 50 to 120 beds, for providing one or two special cells at each of the Government and Municipal General Hospitals, in which violent lunatics may be detained pending their admission to a mental hospital, and for putting the Ezrath Nashim buildings and equipment into proper condition has been urged and was receiving favourable consideration at the end of the year.

Admissions to the Government Mental Hospital numbered 33 and to the Ezrath Nashim Home, 51. The classification of the patients is as follows:-

	Govt. Mental Hospital.	Ezrath Nashim Home.
Idiocy and Imbecility.	1	2
Dementia Praecox.	15	28
Paranoia.	-	1
Mania acute or recurrent.	7	7
Puerperal insanity.	1	1
Melancholia.	1	4
Climateric Hysteria.	1	-
Acute confusional insanity.	3	-
Epileptic insanity.	-	2
Organic insanity.	-	4
General Paralysis.	-	1
Dementia Senilis.	-	1
Drug (Cocaine) Insanity.	1	-
Alcoholic Psychosis.	2	-
Pellagrous Insanity.	1	-
	33	51

MENTAL HOSPITAL RETURNS.

General Statistical Table.

Institution.	Sex.	Number of patients admitted during the year.	Of the foregoing, number believed to be suffering from their first attack of insanity.	Daily average number of patients resident during the year.	Number of patients discharged during the year.			No. of patients who died during the year.	Average duration of residence of those who during the year			Number of patients in residence (i.e. on the books of the Institution) on 31-12-27.
					Recovered.	Relieved.	Not improved.		Died.	Were Discharged.	Remained at the end of the year	
									Days	Days	Days	
Bethlehem Government Mental Hospital.	Males.	19	11	30.7	3	14	2	-	-	157	750	30
	Females.	14	10	26.5	2	8	3	1	128	285	810	23
	Total.	33	21	57.2	5	22	5	1	128	221	780	53
Jerusalem Ezrath Nashim Asylum.	Males.	24	17	27	4	14	3	5	51	353	1263	25
	Females.	26	15	49	6	15	3	2	1123	264	1213	47
	Total.	50	32	76	10	29	6	7	357	306	1232	32

Hospital.	Bed Strength.	Admissions.				Deaths	Discharges	Daily average in Hospital.
		Moslems.	Christians.	Jews.	Total.			
Government Mental Hospital.	60	9	10	14	33	1	32	57.25
Ezrath Nashim Asylum.	50	1	1	49	51	7	46	76.41

(h) School Medical Service.

The number of school children increased from 64,808 in 1926 to 66,920 in 1927. The following table, compiled from figures supplied by the Department of Education, shows their distribution between government and non-government schools.

	No. of Schools.	No. of Boys.	No. of Girls.	No. of Teachers.
Government Schools in towns.	49	5022	2863	374
Government Schools in villages.	266	11466	728	348
Non-Government Schools.	520	25907	20934	2524
Totals.	835	42395	24525	3246

There were 38 more schools and 408 more teachers than in 1926.

The plans submitted during the year for proposed new school buildings were generally superior to those of previous years and some of them reached a high standard of modern school design.

Revised regulations for the Sanitation and Hygiene of School Buildings were issued and no school was permitted by the Department of Education to be opened until it had been inspected and certified by a Government Medical Officer to comply with these regulations. Existing schools were also regularly inspected and improvements in sanitation demanded where necessary. In some instances, where serious defects of sanitation were not remedied, the schools were closed or removed to more suitable buildings.

./.

Overcrowding of class rooms due to lack of sufficient school buildings has lessened to some extent but still remains the most prevalent and serious hygienic defect of the schools in Palestine.

The medical inspection of school children has continued to be performed by the Medical Officers and Nurses of the Department of Health in the Government and a number of non-Government schools while the School Hygiene Department of the Hadassah Medical Organization has carried out the medical supervision of about 23,000 pupils in 266 of the Jewish schools.

The following table summarises the school work performed by Government Medical Officers and nurses during the year.

	Town Schools.	Village Schools.	Total.
Lectures to Teachers.			
No. of Hygiene Lectures by Medical Officers to Teachers.	37	34	71
No. of teachers attending lectures.	329	97	426
Medical Inspection of Pupils.			
No. of children medically examined.	5410	6165	11575
" " " with trachoma.	2526	4365	6891
" " " " other eye diseases.	514	389	903
" " " " defective vision.	356	225	581
" " " " 4 or more teeth badly decayed.	112	58	170
" " " " enlarged spleen.	104	537	641
" " " " heart disease.	11	6	17
" " " " lung affections.	10	12	22
" " " " tuberculous disease.	-	34	34
" " " mentally defective.	-	5	5
" " vaccinations performed.	4790	1231	6021
" " re-vaccinations performed.	2229	1770	3999
" " children treated for malaria.	1000	519	1519
Ophthalmic Treatment.			
o. of attendances for treatment for trachoma etc.	689,680	786,007	1,475,687

The anti-trachoma work in the schools continued to make favourable progress. 59.5% of the children medically examined showed signs of the disease, as compared with 62% in 1926 and 69% in 1925. The incidence in the town schools was 47.3% and in the village schools 70.8%. In the Government schools in

Jerusalem the incidence was only 35%. The lower incidence in the town schools is due to the fact that school nurses trained in ophthalmic work are available to carry out the daily routine treatment and that there is frequent supervision of the work by the Medical Officer, while in the village schools routine treatment is limited to "droppings" done by the school teacher and the medical supervision is less frequent. Acknowledgement must, however, be made of the willing and valuable assistance given both in towns and villages by the school teachers whose help has contributed largely to the success of the work.

The low percentage (1.1%) of children with badly decayed teeth obviates the necessity for any organized school dental service. In this respect Palestine compares very favourably with England where more than 70% of school children require dental treatment.

On account of the slightly higher incidence of malaria in the country during the year, the spleen rate of school children rose from 5.1% in 1926 to 5.95% in 1927 and there were 1519 children treated for malaria as compared with 713 the previous year.

The Hadassah school medical work has extended to the Jewish schools in 8 towns and 64 rural settlements. Pupils in these schools, who require treatment are sent to the Hadassah hospitals and special clinics for school children. 29 nurses are employed on the anti-trachoma work in the schools, which since 1919, has reduced the incidence of trachoma among Jewish school children from 40% to 11.7% at the present time. Skin diseases have been almost eliminated from the schools. A dental clinic for school children exists in Tel Aviv where orthopedic examinations also are undertaken and corrective treatment given for conditions such as scoliosis. The Hadassah School Hygiene Department carry out also the medical examination of teachers and other school staff.

(i) Railway Medical Service.

The general health of railway employees, numbering about 3500, has been satisfactory during the year.

Admissions of railway personnel to hospital numbered 236 as compared with 266 in 1926, 268 in 1925 and 266 in 1924.

The average length of treatment of cases admitted to hospital was 8.2 days as compared with 10.1 days the previous year.

Dispensary attendances were 10,784 as compared with 12,541 in 1926, 11,361 in 1925 and 10,029 in 1924.

Instructions were issued at the end of 1926 and efforts have since been made to reduce the number of dispensary attendances which year by year had shown a tendency to rise. This reduction of 14% is, therefore, very satisfactory and indicates a saving to the railways of some four or five thousand working hours.

./.

The general supervision of the sanitation of railway premises and passenger trains has continued under the control of the Senior Medical Officer, Haifa, who has been assisted by District Medical Officers, and by five Railway Medical Orderlies trained in First Aid and Sanitation and stationed at different places on the line.

The sanitation of railway stations has improved and all stations with a piped water supply have now water carriage systems of sewage disposal. The drainage and disposal system at the Jerusalem Railway Station has been entirely remodelled.

Unsatisfactory housing conditions for labourers at Lydda still continue and until a decision is reached as to whether or not Lydda is to remain the chief railway junction, expenditure on better housing is not likely to be made.

The mechanical filter plant at Kantara has given satisfactory results during the year.

Special attention has been given to the First Aid Boxes kept in the brake vans of trains and at all railway stations and, in order to maintain them fully equipped, each has been supplied with a tally card on which expenditure of first aid material is shown. No accident sufficiently serious to require the use of the hospital coach, took place on the line.

(j) Frontier Force and Police Medical Arrangements.

Except for a small depot at Sarafand and for a Company stationed for a few months at Samakh near Tiberias, the Transjordan Frontier Force did not camp in Palestine during the year, but became permanently stationed in Transjordan. The Palestine Department of Health, therefore, ceased to control the medical arrangements of the Force but still acted in an advisory capacity when called upon to do so by the High Commissioner. Such advice was given in connection with an antimalarial scheme for the base camp of the Force at Zerqa and on general matters of medical and hospital organization. Certain of the Government Hospitals in Palestine continued to treat medical casualties evacuated from Transjordan.

The medical arrangements for the Palestine Police continued as in previous years.

The expenditure on the dental treatment of British constables which was very high during 1926 on account of the necessity of putting into a fit state the teeth of the large number of recruits who joined the force that year, showed a satisfactory reduction during 1927.

Considerable attention was given to the improvement of the ambulance service. On account of the large number of road accidents resulting from increase in motor traffic, and of medico-legal casualties which have to be dealt with, the charge of the motor ambulances was transferred from the Department of Public Works to the Department of Health and

/two

two additional ambulance cars were obtained. The service was coordinated with the police arrangements in the various districts, additional first aid equipment was supplied to police posts and in each district a number of police were given further training in "first aid".

(k) Prison Medical Service.

The health of prisoners, particularly in the Jail Labour Companies, has been generally satisfactory. The prison population averaged about 1950. 322 prisoners were admitted to hospital, their average stay in hospital being 14.1 days and 1029 prisoners with minor or chronic ailments were treated in the Prison Sick Detention Wards at Acre and Jerusalem. An average of 6% of the prisoners in the Jerusalem Central Prison and 11% in the Acre Central Prisons attended the morning sick parades; these figures especially that for the Acre prison, are too high.

There was a further slight improvement in the incidence of tuberculosis in the Central Prisons. 38 cases were under treatment in the Prison Tuberculosis Wards at Acre, viz: 11 cases remaining from 1926, 4 re-admissions and 23 new patients. 9 of the 23 new patients were suffering from the disease prior to imprisonment. Of the 38 cases under treatment, 2 were released on account of the severity of their disease, 2 completed their term of imprisonment, 2 escaped from prison, 15 showed apparent arrest of the disease and 17 remained in the wards at the end of the year. 1927 was the first year in which there were no deaths from tuberculosis.

There was no undue incidence of malaria in the Jail Labour Companies since greater care than in previous years has been taken to site the camps of these companies in non-malarious areas.

Overcrowding continued to be a serious defect of both Lock-ups and Central Prisons. The system of extra-mural labour as recommended by the Prisons Commission, was however introduced for prisoners sentenced to one month or less, and is tending to lessen overcrowding in the Lock-ups. So far the system has worked well and it is hoped to extend it to prisoners sentenced to as much as three months. A further Jail Labour Company is to be formed which should lessen to some extent the overcrowding in the two Central Prisons.

In the Central Prisons, industries continue to be developed. Thus, of the 400 prisoners in the Jerusalem Central Prison, 98 were regularly employed as follows:-

Carpentry.	18	Blacksmith.	1
Mat making.	7	Ironing.	3
Tailoring.	13	Shoemaking.	9
Lamp cleaning.	2	Medical orderlies.	2
Cooking.	13	Weaving.	3
Laundry.	3	Washing.	11
Bakery.	6	Whitewashing.	6
Disinfecting.	2	Gardening.	1
Clerical.	1	Masons.	2

./.

Structural alterations to improve the ventilation of the Central Prisons continue to be made and for the Acre Central Prisons plans for the re-construction of the kitchen, bakery, laundry, ablution, disinfection and latrine blocks, for the building of new sick detention wards and workshops and for the installation of a better water supply have been prepared and it is expected that these various works will be completed at an early date.

(l) Training in "First Aid"!

Courses of instruction in "First Aid to the Injured" were given under the rules of the St. John Ambulance Association, by Medical Officers of the Department at the Police Training School, Jerusalem. The examination results were as follows:-

	No. of candidates.	For Certificate.		For Voucher.	
		Passed	Failed.	Passed	Failed.
Palestine Police.	59	45	14	-	-
Department of Health Personnel.	2	1	-	1	-
TOTAL.	61	46	14	1	-

During the past seven years 557 candidates have taken the examination for the certificate, of whom 404 (168 police, 159 Department of Health and 77 Railway employees) were successful and 7 candidates have been examined for the Voucher with 5 successes.

(m) The Medical Commission.

The Central Medical Board carried out 36 examinations during the year and the District Medical Boards 3214.
Of 1831 police recruits examined by the District Boards 39% were found physically unfit for service as compared with 40.3% in 1926 and 45% in 1925. The most frequent grounds for rejection were non-attainment of height and chest measurement and failure in the visual tests.

(n) Medico-Legal Examinations.

There has been a satisfactory reduction during the past five years in the numbers of medico-legal examinations which Medical Officers of the Department of Health have been called upon to carry out. The numbers have been:

1923	1924	1925	1926	1927
9234	8202	5450	5021	3830

The reduction has resulted from a better understanding of the requirements of the Ottoman Law and the exercise by the Police of more discrimination in asking for reports on trivial cases. At the same time the quality of the examinations carried out by many of the Medical Officers needs to be improved and improvement can only be brought about by practical instruction such as that obtainable in the Medico-Legal Section of the Ministry of the Interior in Cairo.

Medical Officers gave oral evidence in the Courts on 473 occasions and performed 296 post-mortem examinations.

(o) The Practice of Medicine, Pharmacy, Dentistry and Midwifery.

During 1927, 46 new licences were granted to doctors, 9 to pharmacists, 12 to dentists and 38 to midwives, while a considerable number of licences in respect of persons who died or ceased to practise their profession in Palestine, were cancelled.

At the end of the year, therefore, there were 634 doctors, 175 pharmacists, 198 dentists and 247 midwives licensed to practise in Palestine.

The net increase in the number of licensed doctors during the year was only 12 as compared with an average annual increase of 78 between the years 1920 and 1926. The smallness of this increase was not unwelcome in view of the overcrowded state of the medical profession in the large towns.

A Medical Practitioners Ordinance to regulate the practice of medicine and surgery was published at the end of the year.

10 new pharmacies were opened and 5 old ones closed and at the close of the year, 95 licensed pharmacies were in existence. Thanks to the efforts of the Palestine Pharmaceutical Association and to the frequent visits of the Government Inspector of Pharmacies, the condition of the majority of the licensed pharmacies was very satisfactory.

A pharmacopoeia was introduced for the benefit of the village clinics conducted by the Hadassah Medical Organization, the Kupat Cholim and other Jewish bodies. Its aim is to minimise and simplify the stock of drugs and preparations kept in clinics in the Jewish colonies to which no licensed pharmacists are attached and where a certain amount of simple dispensing and compounding of drugs by doctors and nurses has to be permitted.

The conditions of the Dentists Ordinance 1926 were gradually enforced, especially those dealing with unqualified practice.

23 permits have been granted under the Ordinance to unqualified persons who had been practising dentistry in Palestine since September 1921 or longer and who were considered to be sufficiently competent in their profession and otherwise suitable. Before the permits were granted, however, their premises were carefully inspected. Many were compelled to find better premises containing suitable rooms for clinic, laboratory and waiting room while most of the other practitioners had to clean, re-decorate and improve their rooms. Many old and unsuitable instruments and pieces of equipment were scrapped and all persons to whom permits were granted now possess as a minimum a good set of instruments and a suitable instrument cupboard, dental drill, dental chair and spittoon.

37 women were licensed to practise midwifery of whom 26 were trained in Palestine.

LICENCES GRANTED TO DOCTORS, PHARMACISTS, DENTISTS & MIDWIVES - 1927.

				Nationality.																															
			Sex.	Algerian.	American.	Armenian.	Australian.	Austrian.	British.	Bulgarian.	Canadian.	Chinese.	Czecko-Slovak.	Dutch.	Egyptian.	Esthonian.	French.	German.	Greek.	Hungarien.	Italian.	Latvian.	Lettish.	Lithuanian.	Palestinien.	Persian.	Polish.	Roumanian.	Russian.	Swedish.	Swiss.	Syrian.	Turkish.	Ukrainian.	WITHDRAWN.	TOTALS.	GRAND TOTALS.
Medicine	Licences granted.	Prior to 1927.	M	1	11	13	-	19	25	5	-	-	7	-	2	-	3	37	7	2	4	2	1	10	117	2	48	9	81	1	1	46	18	4	230	476	
			F	-	1	-	-	1	4	2	-	-	2	-	-	-	-	3	-	1	-	-	1	1	14	-	13	1	62	-	-	1	-	5	84	112	
		During 1927.	M	-	-	-	-	-	4	-	-	-	1	-	-	-	-	2	-	-	-	-	-	1	9	-	1	1	7	-	1	1	-	-	19	28	
			F	-	1	-	-	-	1	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	2	-	2	2	7	-	-	-	-	-	1	18	634
Pharmacy	Licences granted.	Prior to 1927.	M	-	4	11	-	4	-	1	-	-	1	-	1	-	1	4	3	-	-	1	1	1	52	-	6	3	26	-	-	16	4	3	57	143	
			F	-	-	-	-	1	3	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	4	-	4	-	9	-	-	-	-	-	12	23	
		During 1927.	M	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	1	1	-	-	-	-	-	-	12	8	
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	1	175
Dentistry.	Licences granted.	Prior to 1927.	M	-	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2	14	-	7	1	17	-	1	3	2	-	29	54	
			F	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-	-	-	-	-	-	4	26	-	36	8	52	-	-	-	-	3	90	132	
		During 1927.	M	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	5	2	
			F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	3	-	4	-	-	-	-	-	5	10	198
Midwifery.	Licences granted.	Prior to 1927.	F	-	3	6	-	4	13	-	-	-	1	-	2	-	1	9	1	1	-	1	-	5	69	-	26	2	35	1	1	12	8	8	21	209	
		During 1927.	F	-	2	1	-	-	2	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	20	-	3	-	4	-	-	3	-	-	7	38	247

(p) International Opium Convention.

Regulations under the Dangerous Drugs Ordinance 1925, came into force in February and control details of the sale, distribution and use of dangerous drugs and towards the end of the year an amending ordinance was drafted to bring local legislation into conformity with the recommendations of the International Opium Convention of 1925.

During the year, 92 Import Certificates were issued, the import of dangerous drugs being as follows:-

Medicinal opium and its preparations.	19,470	grs.
Morphine, its salts and preparations.	1,785	"
Heroin, " " " "	488	"
Cocaine, " " " "	7,860	"
Codeine, " " " "	7,575	"
Pantopon..........................	800	"
Dionin............................	1,008	"
Extract of Cannabis Indica...........	1,270	"

The chief exporting countries were Germany, France, England, Switzerland and Italy.

The fact that it was not necessary to place an embargo on the products of any exporting firm indicates better compliance than in any previous year with the local dangerous drugs regulations. Four small consignments of dangerous drugs in respect of which Import Certificates had not been granted, were seized in the Customs Houses. The export of dangerous drugs from Palestine was negligible and was principally to Transjordan.

During the year the following seizures of dangerous drugs which were the subject of illicit traffic, were made:

Hashish,	118	seizures, 1594 kilos	250 grammes.
Opium,	9	"	95 "
Cocaine,	5	"	12.5 "

IV. SANITARY ADMINISTRATION.

(a) Water Supplies.

The following towns have municipal piped water supplies:

(a) from wells or bores
Beersheba, Gaza, Ramleh, Jenin (under construction) Tel Aviv and Tulkarem

(b) from springs
Jerusalem; Nazareth (under construction); Beisan, Hebron, Nablus and Safad (primitive and to part of town only).

(c) from lake
Tiberias.

There is as yet no municipal supply in Haifa or Ramallah while in Jaffa it is limited to the slaughter house area and in Majdal, although there is a motor-driven municipal well, there is no piped supply.

In Jerusalem for the sixth year in succession, the rainfall was below the sixty years' average of 26 inches. 19.37 inches of rain fell between October 1926 and April 1927 and this fall was sufficient to fill most of the domestic rainwater cisterns in the town and surrounding villages and to replenish Solomon's Pools which by March had stored in them nearly 40,000,000 gallons of water. Thanks to this large store and to the fact that the newly developed Ain Farah springs continued throughout the year to yield 200,000 gallons a day, there was no acute scarcity of water in Jerusalem, but the state of the city's supply still remains precarious and gives rise to anxiety. Chlorination (with stabilised bleaching powder) has been used for purifying the water from Solomon's Pools and Birket 'Arrub but recommendations have been put forward for the installation of a set of Bell Bros. mechanical filters at Solomon's Pools. The purity of the water from these sources has been fairly well maintained by chlorination; thus of 143 routine samples of chlorinated water submitted for bacteriological examination, 124 contained no FLAGINAC colon bacilli in 10 c.c., 12 samples contained the bacilli in 10 c.c. but not in 5 c.c., 7 samples contained them in 5 c.c. or in smaller quantities down to 0.5 c.c. Of 29 samples of unchlorinated water taken for control purposes, 13 contained no colon bacilli in 10 c.c., 5 contained the bacilli in 10 c.c. but not in 5 c.c. and 11 contained them in 5 c.c., and smaller quantities down to 0.1 c.c.

The 'Ain Farah springs were considered to be bacteriologically pure and well protected from contamination so that chlorination of the water from them was discontinued. Of 65 samples of unchlorinated water taken at the service reservoirs fed by these springs, 46 contained no colon bacilli in 10 c.c., 6 contained the bacilli in 10 c.c. but not in 5 c.c. and 13 contained the bacilli in 5 c.c. or smaller quantities.

The Tiberias Water Supply Scheme was completed and a number of house connections were made. Many house holders still continued to draw the water they required for domestic use direct from the lake and measures were consequently taken to have the lake shore adjacent to the town, fenced off. A Paterson chloronome for the new supply was on order but had not arrived when the year closed.

At Jenin a scheme for sinking a well, providing a motor driven pump and gravity reservoir with piped supply to the town, was in hand.

At Nazareth, a spring a few kilometres from the town was being developed, a motor pump installed and pipe line laid.

The Acre Water Supply is to be improved. The last section of the 200 year old stone aquaduct is to be replaced by a pipe line and a service reservoir is to be constructed on the ramparts of the town.

At Beersheba the two municipal wells were cleaned and repaired and an attempt was being made to provide a better service reservoir so as to obtain a greater pressure in the town mains.

Continued attention to village water supplies has resulted in numerous improvements. Thus, in Jerusalem and Ramallah sub-districts the springs of six villages were tapped by means of iron piping and proper watering places provided, while in the Hebron sub-district self-cleansing well heads built of masonry and cement were constructed in five of the villages.

(b) Sanitary Engineering Section.

This section of the Department continues to carry out much useful and varied work. As an educational factor its activity is increasing. Formal courses of instruction are given to sanitary inspectors, but in addition the office is consulted by an increasing number of architects, plumbing contractors and engineers to whom informal demonstrations and technical advice upon sanitary requirements are given. A course of lectures was given on Sanitary Engineering to students of Hygiene of the Hebrew University. A course of instruction in rural sanitation was given to six inspectors appointed for special duties in the Jewish settlements. The Sanitary Engineer is a member of the building committees of the Nathan Straus Health Centres now being constructed in Jerusalem and Tel Aviv.

An outline of projects which engaged the attention of this section during the year is as follows:-

Water Supplies.

Recommendations for the water supply of the Palestine Electric Corporation construction camp at Jisr el Majamieh;

specifications for rapid sand filtration Jerusalem supply at Solomon's Pools; revision of scheme for water supply of Menshiyeh; review of and advice upon scheme for cistern supply Dilb village; preparation of map of Palestine indicating water supplies; review of proposals for Hebron town; review of the Jenin water supply proposals.

Antimalarial Drainage.

Technical assistance in Musrara Scheme prepared by the Malaria Survey Section and Malaria Research Unit; completion of drawings of Nahr Rubin Scheme prepared by Malaria Survey Section; review of the Public Works proposals for Kishon River Scheme.

Sewerage and Sewage Disposal.

Schemes prepared for disposal of effluent by irrigation Jerusalem North West Drainage; for drainage Jenin town; for improvement of sewer outfalls in Jaffa of the Port, old Mosque and Bassa drains; for reconstructions of old sewers of Jaffa town and for extension of new drainage in Jerusalem to Ruhama and Beit Israel quarters. Review of schemes in Tel Aviv, Beit Jala and Jerusalem (Antimos, Antioch and Even Israel quarters). Report on sewage disposal Afule and advice regarding preliminary investigations for Hebron town and preliminary drainage lines Jenin town.

Sanitation and Plumbing.

Preparation of new standard designs for septic tank squatting latrine, concrete squatting type bucket latrines for standing camps, squatting type water closets; preparation of designs for latrines for earthquake refugee's camps, and for Jewish settlements; review of sanitary installations for Government buildings the more important of which were the British Residency Transjordan, Jaffa Post Office, Acre Central Prison, Customs Warehouse Jaffa, Government Offices Jerusalem, and for other institutions amongst which were the English Girls School Haifa, Opera Cardinal Ferrari School and Hospice Jerusalem, Russian School Bethlehem, the Mosque Jaffa, the Institute of Physics Hebrew University and the new Y.M.C.A. building Jerusalem.

Public Establishments.

Standard designs were made for grocers shops and local tanneries, cowsheds and stables, and recommendations for lay-out of camp and design of barrack huts made for the Palestine Electric Corporation construction camp, plans reviewed for the Mograbi Theatre Tel Aviv, soda water and ice factories Jerusalem, various school buildings and a new hotel, Jericho.

./.

Public Institutions.

Line plans prepared for proposed Isolation Hospital Jerusalem, Isolation Hospital Haifa, Infectious Diseases Annexes Jaffa and Nablus, and the working drawings of these prepared by P.W.D. reviewed for Departmental requirements; the plans of the proposed quarantine station, Maan were revised and estimates checked, the proposals for improvement of Gaza and Beersheba Hospitals and for the construction of a Maternity Block and Infant Welfare Centre Nablus, were drawn up. Plans were reviewed and modified for the proposed C.M.S. Hospital Amman, and the Tel Aviv Municipal Hospital; drawings showing requirements for the extension of the Mental Hospital, Bethlehem, were prepared. Plans of various new private nursing homes reported on, and proposals for the Schweitzer Hospital Tiberias, reviewed and sanitation scheme drawn up.

Disinfecting Machines.

Drawings were prepared for the installation of a fixed disinfecting machine at Jaffa Lazaret; Instructions charts and drawings prepared for the operators of various types of machines used by the Department. Recommendations were made in regard to repair and maintenance of machines in possession of the Department together with tests and demonstrations of the operation of the new petroleum heated type of portable steam disinfector.

Miscellaneous.

Designs were made for standard type workmen's dwellings, for village homesteads, for calf stable Acre Stud Farm (on behalf of Empire Marketing Board), for children's playground Jerusalem, and for Municipal observation kennels for rabid animals. An illustrated pamphlet upon the common House Fly its danger to health etc. was prepared for publication. This has now been translatted into the three official languages and printed for issue to schools and health institutes. A variety of maps and charts showing Departmental activities were prepared. For demonstration purposes a number of models were made and placed in the Departmental Museum.

(c) Municipal Sanitary Work.

The sanitary services in the larger towns continue to be maintained satisfactorily. Building developments in Jerusalem, Jaffa and Haifa have led to a considerable increase in this branch of municipal activity. Bye-laws under the Town Planning Ordinance have been adopted in the larger towns based on the model published by the Central Town Planning Commission in 1926. The Department has issued Plumbing Regulations under the Rules of the Central Town

Planning Commission. These have been translated into the official languages and provide inspectors, plumbers and contractors with a ready guide to requirements of modern sanitary installations. The report of the consulting Engineer engaged by Government to advise upon the main drainage of Jerusalem, Jaffa and Haifa towns was received during the year. This report confirms the recommendations of the Sanitary Engineer of this Department in regard to general principles and in addition provides authoritative guidance upon matters previously the subject of discussion.

In Jerusalem the development of the western section of the new town is seriously handicapped by the absence of main drainage. Many large and important buildings and building schemes projected are delayed or limited in design on account of the difficulties of sewage disposal. Proposals for an increased water supply are likewise dependent especially in the developing section of the town, upon the provision of a main sewer.

In Haifa and Jaffa, coastal towns where disposal is not such a difficult problem, sections of main sewer have been laid on the lines of the consulting engineer's report. In Jerusalem considerable extension of the drainage system of the North West area has been accomplished and emphasizes the fact that where a main line is provided together with an outfall, its extension and the construction of lateral branches presents little difficulty financial or otherwise within the limits of the drainage or collecting area. The initial cost of these extensions is willingly borne by individuals interested in building development. Construction is carried out under the supervision of the Municipality after approval of the plans by the Sanitary Engineer of the Department. Progress has been made in the larger towns in securing the installation in dwelling houses and public establishments of proper domestic sanitary fittings and drainage connecting either to septic tanks and percolating pits or to a sewer line where one exists within reasonable distance. The plumbers examinations initiated by the Department in Tel Aviv have been of benefit to all other centres. There are now men working in all the chief towns who are capable of making lead joints and who know how domestic sanitation should be arranged and executed. As is the case in every country, supervision of workmanship and final tests by inspectors are most important to prevent unsatisfactory work. In this direction the Sanitary Surveyors of the larger Municipalities have succeeded in securing a definite advance. The plans and proposals require to be submitted for approval in the case of every new building or alteration to existing premises. Conscientious inspection, final testing and condemnation of faulty work are producing creditable results.

As an indication of the extent of this branch of work supervised by Sanitary Surveyors of Municipalities the following figures may be quoted. In Jerusalem 562 inspections were made of sanitary installations in regard to new buildings, 589 in regard to repairs or alterations of existing buildings, and 273 houses were inspected and drainage arrangements approved in consideration of applications for connection to the town water supply. The connection of 96 houses to the N.W. drainage system was approved and work supervised. In Haifa complete house drainage systems including approved type of internal sanitary appliances were installed during the year in 101 new houses involving the installation of 2098 metres of drains; 6358 metres of new drainage lines in existing houses and public establishments were laid and tested. Similar work was carried out in Jaffa. The sanitary installations in 89 private buildings and 54 public establishments were approved. 795 metres of sewer line have been newly constructed and in one instance an outfall extending 100 metres to sea completed. In Tel Aviv the supervision of sanitary installations was efficiently carried out until the Municipal Council abolished the post of Plumbing Inspector about the middle of the year. This retrogressive step was strongly opposed by the Department. There is unfortunately now no assurance that work is being carried out in accordance with approved plans or specifications.

In the small town of Jenin a grant-in-aid was given by Government for the construction of a main sewer in a section of the town in connection with the expansion of the water supply.

The new slaughter house at Jaffa is being conducted satisfactorily and has been visited by committees of other towns where similar developments are required. The new slaughter house in Jerusalem is now an item of practical politics and the Department hopes to see its recommendations of recent years materialise before long.

Meat inspection in the towns of Haifa, Jaffa, Tel Aviv and Jerusalem is now well organised, with result that butchers are now more careful to purchase animals likely to pass inspection. In Jerusalem 78,501 animals were slaughtered. Carcases of 3 cows, 11 goats and 14 sheep were condemned for generalised tuberculosis and parts of 10 cows, 82 goats and 14 sheep for localised disease. Actinomycosis was noted in 47 bulls, 178 sheep and 7 goats, Pleuropneumonia in 7 bulls, Cysticercus in 74 cows of local origin, Echinococcus cysts in about 11,000 cattle, sheep and goats. Other conditions recorded were distomatosis, strongylosis, pneumonia, pericarditis, septicaemia and nephritis. In Haifa 25,318 animals were slaughtered. Of cattle 7 carcases, 38 forequarters, 17 hindquarters, 17 heads and 6 hearts, 117 livers and 25 lungs were condemned. Of this 4 carcases, 21 forequarters, 11 hindquarters, 17 heads and 6 hearts were condemned on account of cysticercus bovis in Palestine grazed cattle. Of sheep and goats 53 carcases, 310 forequarters, 8 hindquarters, 2757 livers, 801 lungs, 69 hearts and 50 spleens were condemned.

./.

(d) Village Sanitation.

As is to be expected progress is slow. In Arab villages built as they are in the crowded and congested manner of the country, not more than general cleanliness of roads and alleyways is demanded. This is maintained by the periodical visits of sanitary inspectors and Medical Officers in the course of their duties in connection with infectious disease, antimalarial work and the supervision of mukhtars duties in regard to recording of births and deaths and the notification of infectious disease.

In Jewish settlements some progress has been accomplished in the provision of sanitary type of latrines. In Jaffa area in certain of the older colonies satisfactory work has been accomplished in securing the installation of water borne drainage to cesspits in new buildings. In the case of Petah Tikvah, one of the larger settlements, a considerable advance has been achieved by the continued efforts of the Medical Officer of the Department, in the better organization and execution of all the sanitary services of the Local Council.

(e) Licensing and Control of Trades and Industries.

The new ordinance was passed towards the end of the year. In Municipal areas the licensing authority is the Municipal Council, in other areas the District Commissioner. The industries subject to regulations are classified as follows: (1) Trades and Industries affecting Public Health, (2) Trades and Industries affecting Public Security and (3) Establishments requiring veterinary supervision. The ordinance enables regulations to be made regarding:

(a) structural requirements of premises, and the provision of appliances for securing the safety of employees and public,

(b) precautions to be taken in keeping and storing inflammable, explosive or other dangerous material,

(c) the sanitary conditions under which any classified trade may be conducted.

In addition there may be attached to a licence, in the interests of Public Health or Public Order, special conditions under which the trade shall be conducted.

The Department has extensive duties under the Ordinance in regard to the approval of licences, and the general supervision of the application of the ordinance. Draft licence forms and regulations for the procedure of licensing have been prepared and general regulations under the headings specified above are in process of preparation.

The scope of the Ordinance is wide but the principle of application is such that progressive improvement in the conditions under which industries are conducted which affect the public well-being, may be attained without placing too heavy a burden upon the industry itself.

No. OF TRADES AND INDUSTRIES IN PALESTINE DURING 1927.

No. LICENSED AT END OF 1927.

	Jeruselem.	Ramallah.	Bethlehem.	Hebron.	Beersheba.	Jaffa.	Tel Aviv.	Ramleh.	Gaza.	Majdal.	Haifa.	Acre.	Nazareth.	Nablus.	Tulkarem.	Tiberias.	Safad.	Beisan.	Jenin.	TOTALS.
Alcohol Depots.	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	6	-	-	10
Attars.	26	-	-	8	4	13	-	-	18	-	11	2	-	-	-	-	-	-	-	82
Barbers.	97	8	12	18	4	99	61	48	34	10	79	17	17	25	17	18	17	4	5	590
Bakeries, Bread Shops & Flour Stores.	116	10	4	36	4	69	53	22	17	-	64	13	14	23	5	37	18	3	6	514
Breweries.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Butchers and Tripe Shops.	149	14	29	26	5	64	70	18	22	8	60	5	12	19	15	15	22	4	4	561
Candle Stores.	11	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Cheese and Butter Factories.	7	-	-	-	-	4	5	-	-	-	4	-	-	-	-	-	-	-	-	20
Cigarette and Tobacco Factories.	1	-	-	-	-	1	-	-	-	-	4	1	-	3	-	-	-	-	-	10
Cinemas and Public Halls.	2	-	-	-	-	4	1	-	1	-	4	-	-	-	-	1	-	-	-	13
Coffee Grinders & Spice Merchants.	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	4
Confectionery and Pastry.	60	4	-	4	1	33	2	7	7	-	26	17	2	17	4	8	13	-	1	206
Cotton Beaters.	10	-	-	3	-	-	-	-	2	-	2	2	-	5	-	-	-	-	-	24
Cow Sheds.	76	4	-	-	-	-	7	55	-	-	13	-	-	1	-	5	29	-	-	190
Distilleries and Wine Presses.	48	3	9	1	-	7	1	-	-	-	6	-	1	-	-	-	-	1	-	77
Dyers.	5	-	-	7	5	1	2	4	22	13	2	1	1	-	-	-	13	-	-	76
Establishments for the retail sale of petroleum, spirit, paraffin and mineral oils.	28	1	2	2	2	10	-	8	-	-	6	-	-	-	-	-	-	-	-	59
Fish Mongers.	15	-	-	-	-	16	22	2	2	-	5	3	3	-	-	1	1	-	-	70
Flour or Corn Mills.	16	3	5	4	3	7	-	7	7	3	6	1	3	2	2	2	1	6	2	80
Furriers.	-	-	2	13	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	21
Glass Factories.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

No. OF TRADES AND INDUSTRIES IN PALESTINE DURING 1927.
No. LICENSED AT THE END OF 1927.

(Continued).

	Jerusalem.	Ramallah.	Bethlehem.	Hebron.	Beersheba.	Jaffa.	Tel Aviv.	Ramleh.	Gaza.	Majdal.	Haifa.	Acre.	Nazareth.	Nablus.	Tulkarem.	Tiberias.	Safad.	Beisan.	Jenin.	TOTALS.
Granaries.	27	7	6	34	10	45	24	-	35	-	40	-	3	25	-	-	-	-	-	256
Greengroceries.	131	-	7	8	8	45	36	39	80	11	104	35	18	48	36	47	19	-	4	676
Groceries.	691	74	114	164	51	493	407	216	201	47	430	63	68	203	148	96	144	85	23	3718
Gut Scrapers.	3	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	9
Hawkers.	220	29	5	-	-	-	114	-	-	-	-	-	-	-	-	-	-	-	-	368
Hawkers Stalls.	33	-	-	-	-	74	-	-	-	-	-	-	-	-	-	-	-	-	-	107
Hotels, Boarding & Lodging Houses.	55	1	-	4	-	31	25	3	3	-	49	6	5	8	2	22	9	2	2	227
Ice Cream and Lemonade Shops.	53	1	1	-	-	28	5	-	1	-	3	6	-	-	1	30	1	-	-	130
Ice Factories.	3	-	-	-	-	3	1	-	-	-	7	1	-	-	-	1	-	-	-	16
Industries with Machinery.	67	-	-	-	-	29	-	-	-	-	44	1	-	-	-	3	-	-	-	144
Inns (Khans).	6	-	-	-	2	1	-	-	7	-	-	-	4	13	4	6	12	2	-	57
Kitchens.	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Laundries.	13	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	16
Macaroni Factories.	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	2
Manure Depots and manufacturies including depots for refuse and cesspool contents and artificial manure depots and factories.	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Markets (Food and Vegetable).	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Matches Stores and Factories.	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Milk Shops.	3	-	-	-	-	4	3	-	-	-	20	-	-	3	-	6	-	-	-	39
Milk Vendors.	258	-	34	2	-	52	80	1	8	-	-	-	-	-	-	-	-	-	-	435
Mineral Water Factories.	5	-	-	-	-	2	5	1	-	-	4	1	-	-	-	1	1	-	-	20
Oil Factories.	13	3	5	13	-	6	-	42	7	4	15	1	1	7	-	-	4	-	-	121
Paint Factories.	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1

No. OF TRADES AND INDUSTRIES IN PALESTINE DURING 1927.

No. LICENSED AT THE END OF 1927.

(Continued).

	Jerusalem.	Ramallah.	Bethlehem.	Hebron.	Beersheba.	Jaffa.	Tel Aviv.	Ramleh.	Gaza.	Majdal.	Haifa.	Acre.	Nazareth.	Nablus.	Tulkarem.	Tiberias.	Safad.	Beisan.	Jenin.	TOTALS.
Pharmacies and Drug Stores.	32	2	3	2	-	27	35	3	1	-	17	3	3	2	-	1	3	-	2	136
Potteries.	3	-	-	11	-	-	-	15	33	-	2	1	-	1	-	-	-	-	-	66
Poultry Shops.	35	-	-	-	-	1	-	-	-	-	4	-	-	-	-	-	-	-	-	40
Public Baths.	9	-	-	3	-	4	2	2	3	-	6	2	-	6	-	-	2	-	-	39
Rag and second hand clothing Establishments.	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29
Restaurants and Bars, Coffee Houses and Coffee Bars.	278	16	12	18	5	206	213	62	26	6	211	54	26	40	11	43	17	9	11	1264
Salt Mills.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Sausage Factories.	1	-	-	-	-	1	1	-	-	-	3	1	-	-	-	-	-	-	-	7
Seed Roasters.	8	-	-	-	-	9	-	-	-	-	3	-	1	5	-	-	-	-	-	26
Slaughter Houses.	1	1	1	1	1	-	2	1	-	-	-	-	1	1	1	-	4	1	1	17
Soap Factories.	1	-	-	-	-	11	1	2	-	-	2	1	-	24	-	-	-	-	-	42
Stables.	49	6	9	6	-	-	4	7	-	-	17	8	-	-	-	-	-	-	4	110
Tanneries and Hide Stores.	11	-	1	2	-	1	1	1	-	-	2	-	-	2	4	-	-	-	-	25
Tile and Brick Factories.	10	-	-	-	-	6	-	2	6	-	13	-	-	-	-	-	-	-	-	33
Tinsmiths.	7	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
Water Carriers.	100	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	109
Farriers.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Dairies.	4	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	6
TOTALS.	2838	187	265	400	105	1417	1186	570	549	102	1289	248	183	495	250	343	336	117	65	10941

V. RELIEF.

The number of orphans, to whose maintenance a contribution is made from Departmental credits, is 11. These children remain under the care of the Syrian Orphanage in Jerusalem, where facilities exist for training in various occupations. The cost of their maintenance and education is equally shared between Government and the Orthodox Patriarchate. It is anticipated that in the next year or two all these children will be self-supporting.

VI. QUARANTINE SERVICE.

(a) General.

The normal work of the Quarantine Service in the supervision of ships and passenger traffic from vessels was less than last year. The incidence of bubonic plague in ports of the Eastern Mediterranean was low during the year and consequently quarantine procedure with arrivals was unnecessary.

One sailing vessel which arrived without Bill of Health was kept in quarantine pending enquiries from the previous port of call in Egypt.

Jewish immigration was less in amount than previous years.

The Quarantine Lazaret of Haifa was improved by construction of semi-permanent buildings in concrete. A dining room for third class passengers, a new general kitchen, store room for equipment, and baths and lavatories for first class passenger compounds were completed during the year. The entire fencing of the lazaret was reconstructed and the drainage lines relaid. The port disinfecting station was improved by the addition of rooms for dealing with baggage, offices for immigration staff and a customs examination room. A Clayton Sulphur gas machine was installed for treatment of baggage in bulk.

The external fencing of the Jaffa Lazaret was reconstructed. The internal division into compounds was put in hand and is nearing completion. Improvements to the permanent buildings were undertaken, namely the re-arrangement of the first class bath rooms, and the provision of verandahs to the 2nd and 3rd class blocks. Some minor additions to these blocks were also commenced to enable their use in special circumstances as an emergency hospital for infectious diseases.

While the work of the ports remained normal the quarantine service was extremely busy during the summer at land frontier posts. The outbreak of cholera in Iraq and its steady progress towards the Northern frontiers of that country during the summer, caused considerable concern to the Health Authorities of Egypt, Syria, Transjordan and Palestine. The traffic on the trans-desert motor car route from Baghdad to Damascus has now reached large dimensions and a large number of travellers pursue their journey from Damascus through Palestine to Egypt.

Pilgrims from India, Afghanistan, Persia and Iraq are also showing a preference for this route. Communications between Baghdad and Cairo by means of the air mail service with its halting station at Gaza is now a matter of hours. The development of these routes of travel provide the means for the rapid transference of epidemic disease from the Middle East to the shores of the Mediterranean. On the appearance of cholera in Basra and its spread through Iraq a conference of the Health Authorities of Egypt, Syria and Palestine was held in Baghdad and agreement reached upon the methods for supervision of traffic.

It was decided to close the alternative routes across the desert from Iraq via Palmyra to Syria and via Amman to Palestine leaving the Damascus route alone open. All travellers before receiving a visa to enter Syria from Iraq were required to produce evidence of recent inoculation with two doses of anti-cholera vaccine, and were subject to health inspection before departure. A quarantine station was opened by the Syrian Authorities on the Damascus route where passengers not in possession of these certificates were detained for stool examinations and to complete a period of five days from the date of leaving Iraq.

In Palestine, medical surveillance of all travellers from Syria was instituted. Control posts were established at Ras el Nakura and at Rosh Pina where the roads from the frontier posts of Metulla and Banat el Yacoub converge, with facilities for the detention of travellers for medical examination and observation when necessary. Travellers entering by rail via Samakh were notified for surveillance by staff placed on the trains for this purpose.

Provision was made for the supervision of the health of travellers by air mail at Gaza and for the detention of those alighting at that aerodrome who were not in possession of the necessary health certificates or who showed suspicious signs of illness.

A scheme was drawn up in consultation with the Police Department for the protection of the frontier districts in the event of Syria becoming infected. This envisaged the establishment of police and medical control at all the more important points of entry, the establishment of a third detention post at Samakh, the anti-cholera inoculation of the inhabitants of frontier villages, and their daily visitation by inspectors in order that early cases of suspicious illness might be detected and investigated without delay. Fortunately, it was not necessary to put these measures into force, but all preparations for immediate action were completed. The Department advised and assisted in the preparation of a similar medical defence scheme for the Northern frontier of Transjordan.

Later in the year, there was an outbreak of small pox in Damascus and a high incidence of cases in Beirut and other parts of Syria. It was considered advisable to require all persons entering Palestine from Syria to be vaccinated with calf lymph or to be in possession of certificates of recent vaccination. The surveillance of travellers was therefore maintained until the end of the year.

(b) Port Quarantine Operations.

The statistics of work performed by the Quarantine Service show that 3708 vessels were visited for purposes of health inspection compared with 3831 in 1926. 307

persons were detained in lazarets compared with 2347 in 1927. The decrease is mainly due to the fall in immigration. Immigrants arrived in smaller parties and it was possible to finish procedure on the day of arrival in most cases.

(c) Medical Surveillance.

37,995 persons entering the country were notified to their destinations for medical surveillance. Of these 36,744 or 96.70% were traced and the period of surveillance completed. Last year's figures were 32,698 persons notified and 93.98% traced. The numbers notified from sea ports were 16,849 compared with 25,513 last year. The difference mainly being due to diminished Jewish immigration.

(d) Moslem Pilgrimage.

601 pilgrims proceeded to Mecca under the arrangements made by the Department. The Department issues the special pilgrims "laissez-passer" which contains health certificates, certificates of inoculation with 2 doses of anti-cholera vaccine, and vaccination against small pox, together with return railway tickets between Palestine and Suez.

A considerable number of foreign pilgrims visit Palestine both before and after the ceremonies at Mecca. The Department carries out medical surveillance of all pilgrims on their return from Mecca. These pilgrims disembark at Suez and by arrangement with the International Quarantine Board of Egypt are escorted in parties to Kantara where they are taken over by staff of this Department and notified to their destinations.

1724 pilgrims passed through Kantara on their return from the Hijaz. Of these 1137 are foreigners.

(e) Immigration.

The following particulars are kindly furnished by the Chief Immigration Officer.

3593 immigrants and travellers permitted to remain as immigrants, were recorded during the year. Their classification by countries of origin is as follows:-

Irish Free State.	1	Holland.	9	Germany.	177
British Isles.	164	Belgium.	7	Austria.	35
Canada.	10	Denmark.	1	Dantzig.	6
Australia.	5			Hungary.	31
Cyprus.	16			Switzerland.	14
South Africa.	12	Latvia.	27		
Malta.	3	Lithuania,	150		
India.	5	Finland.	2	Egypt.	177
Norway.	1	Russia.	551	Morocco.	4
Sweden.	4	Poland.	958	Algeria.	1
		Esthonia.	1	Tunis.	2
Bulgaria.	28				
Czecho-Slovakia.	22	Turkey.	68	Spain.	16
Roumania.	161	Syria.	244	France.	101
Yugo-Slavia.	13	Armenia.	14	Italy.	108
				Greece.	38
Mesopotamia.	6	Persia.	34		
Sudan.	1	Afghanistan.	1	China.	1
Aden.	56				
Iraq.	93				
Yemen.	29			U.S.A.	143
Abyssinia.	15				
Hijaz.	2				
Argentine.	5				
Brazil.	4				
Cuba.	4				
Uruguay.	2				
S. America.	8				

2578 immigrants and travellers permitted to remain as immigrants, were medically examined under the medical clauses of the immigration regulations. Of these one was found to be suffering from leprosy, a disability under the regulations, and was therefore not eligible for admission to Palestine as an immigrant.

VII. LABORATORY SECTION.

The Government Central Laboratories in Jerusalem constitute as previously the headquarters of the Section. At the ports of Haifa and Jaffa, however, Government also maintains branch laboratories which, in addition to meeting the usual hospital and public health needs of these districts, comply with the requirements of the International Sanitary Convention and are specially equipped for cholera and plague examinations. Clinical laboratories, supported some by Government and some by private funds are attached to hospitals in the main towns and their distribution affords every facility for rapid diagnosis.

This report while designed to give some idea of the nature and scope of the activities of the Section as a whole, will, as in former years, be confined to the work performed at the Central Laboratories, reference being made only when necessary for the sake of completeness to the more important diagnostic data furnished by other institutes.

In order to cope with the work entailed by an ever-increasing number of medico- and chemico-legal examinations and by mass-production of vaccines, a second bacteriologist and an additional chemical laboratory technician were appointed towards the end of the year. The Establishment of the Central Laboratories is now therefore as follows:-

Senior Staff.

Asst.Director (L),Dept.of Health)
Officer - in - Charge.)
Government Analyst.
First Bacteriologist.
Second Bacteriologist.
Assistant Analyst.

Junior Staff.

Senior Attendants.	2
Junior Attendants.	6
Clerks.	2

Labour Service.

Cleaners.	4
Messenger.	1
Stableman.	1

+ + + +

The Report will be presented in the order shown in the subjoined index:-

A. BACTERIOLOGICAL SUB-SECTION.

1. Routine Diagnosis.
2. Medico-Legal Investigations.
3. Public Health Examinations.
4. The Vaccine Institute.
   (a) Anti-Rabies Division.
   (b) Anti-Variolous Division.
   (c) General Vaccine Division.
   (d) Anti-Sera.
5. Research.

./.

B. CHEMICAL SUB-SECTION.

1. Summary of work done.
2. Government Departments and other sources of samples submitted.
3. Tables.

Note:-

Tables included at appropriate places throughout the Report are:-

Table I.	Record of Bacteriological Examinations performed during 1927.
Table II.	Laboratory Findings in Malaria 1927.
Table III.	Government Anti-Rabies Institutes. Statistics for 1927.
Table IV.	Control of Rabies. Yearly Statement 1927.
Table A.	Record of Chemical Examinations for 1927.
Table B.	Record of Milk Analysis in Jerusalem and districts.
Table C.	Outline of work now undertaken in connection with the collection of Customs and Excise revenue.

+ + + + + +

A. BACTERIOLOGICAL SUB-SECTION.

1. ROUTINE DIAGNOSIS.[x]

Findings shown under this head represent a record of 140,839 examinations carried out during 1927 by the various bacteriological laboratories in Palestine. The number and nature of the more important examinations performed, together with the findings of greatest interest are shown in Table I.

(a) Blood Films.

Laboratory statistics of malaria for 1927 are detailed in Table II. Of a total of 23,923 blood films examined 4264 proved positive, viz: P.vivax 2636; P.malariae 1489; P.falciparum, 139.

Percentage of relative incidence, therefore, as judged from the results of laboratory examination, may be reckoned to be: Benign Tertian 61.82; Malignant Tertian 34.92; Quartan Malaria 3.26. In 1926 relative incidence was 57, 39.4 and 3.6 respectively, while for the period 1921-1926 during which 165,803 films had been examined Benign Tertian accounted for 66.25 per cent. of the malaria in Palestine, Malignant Tertian for 31.69, and Quartan Malaria for 2.06.

---

[x] The bacteriological nomenclature used throughout is that recommended by the Bulletin of Hygiene Feb.1928 "pending some form of international agreement".

The comparative rarity of the quartan form was again noticeable although its incidence percentage was higher than usual, i.e. more than 2 per cent.

(b) Blood examinations.

Enumerations of red and white cells totalled 3802; differential counts were made 4099 times; the haemoglobin index was estimated on 3531 occasions.

From 2656 specimens received for blood culture, growth was obtained as follows:- Bact.typhosum 172, Bact.paratyphosum A 9, Bact.paratyphosum B 13, Bact.coli 2, Streptococcus 5. Str.pneumoniae 3, Staphylococcus 3, showing in all 107 positive results.

(c) Histological Sections.

146 tissues were examined. Negri bodies were found in the brains of 60 animals suspected of rabies; while among human pathological conditions occurred 9 epitheliomata, 3 adenocarcinomata and 1 lympho-sarcoma.

(d) Serum Reactions.

(1) Agglutination Tests.

11,075 agglutination tests were performed. Positive reactions were obtained with the following organisms to the number indicated:- Bact.typhosum 811, Bact.paratyphosum A 64, Bact.paratyphosum B 162, Br.melitensis 18, Prot.vulgaris X_{19} 109. Serological investigation of cases suspected of typhus fever or of enterica disease has, as in 1926, been carried out by the method of qualitative receptor analysis. This method which does away with the necessity for end-titre estimations has the advantage over quantitative serum analysis by being able, in so far as the enterica are concerned, to differentiate between agglutination due to actually present disease and that caused by inoculation or anamnestic reaction.

(2) Diagnosis of Syphilis.

From 2498 Wassermann Reactions 430 positive results were obtained. All sera for the diagnosis of syphilis must now be submitted to the Central Laboratories for examination, centralization having been found essential to obtain uniformity of results.

(3) Precipitin Reactions.

To meet the frequent demands made by the Legal Authorities for investigations into the nature of stains found on the clothing etc. of persons suspected of murder the differentiating precipitin test has been applied on 32 occasions. All anti-sera used in this test have been prepared in the Central Laboratories, viz:- human, ox, sheep, horse, donkey, camel, goat, etc.

./.

(e) Urines.

Microscopic examinations of urine totalled 19,532 and revealed on 34 occasions ova of S.haematobium, on 6 the presence of N.gonorrhoeae.

Certain organisms were isolated by culture of 1645 catheter specimens:- Bact.typhosum 21 times, Bact.paratyphosum B 4, Bact.coli communior 15, Bact.coli communis 104.

(f) Sputa.

The Mycobacterium tuberculosis was found to be present in 674 out of the total 2971 specimens submitted.

(g) Pharyngeal Swabs (including Naso-pharyngeal).

2780 examinations showed C.diphtheriae 296 times present, the Neisseria meningitidis 2, the Mycobacterium leprae 46, while 42 cases of Vincent's angina were identified. The periodic examination of the Leper Hospital inmates by the medical staff of the Central Laboratories has now become routine.

(h) Urethral Smears.

Neisseria gonorrhoeae was found in 118 out of the total 901 urethral smears forwarded for examination.

(i) Faeces.

Microscopic examination was carried out on 20,762 stool specimens, cultural examination on 9820.

Of the microscopic examinations the following were the most important findings:- Protozoa: E.histolytica (free) 1377, E.histolytica (cyst) 232, Giardia intestinalis 383, Chilomastix Mesnili 1, Trichomonas intestinalis 756.
Worm Ova: Ascaris lumbricoides 774, Trichuris trichiura 1659, Enterobius vermicularis 100, Ankylostoma duodenale 58, Dibothriocephalus latus 11, Taenia saginata 219, Hymenolepis nana 108, S.mansoni 13.

It will be observed that these helminth findings are in close relative agreement with those contained in the 1926 report on 80942 examinations.

From cultural examinations the results were:- Bact. typhosum 120, Bact.paratyphosum A 19, Bact.paratyphosum B 20, Bact.dysenteriae (Shiga) 135, Bact.dysenteriae (Flexner) 335.

(j) Cerebro-Spinal Fluid.

Lumbar puncture was performed on 132 occasions. Microscopic and cultural examinations showed the following organisms to be the causal agent of disease to the number indicated:- Neisseria meningitidis 7, Str.pneumoniae 15, Str.pyogenes 12, Staphylococcus 2.

./.

(k) Conjunctival Exudates.

Examination of 5114 such smears incriminated as the cause of conjunctivitis the Haemophilus of Koch-Weeks 226 times, Haem.lacunatus 88.

(l) Rabies.

On behalf of the Veterinary Authorities 81 microscopic investigations were made on brains extracted from suspectedly rabid animals. In 60 cases Negri bodies were found.

The biological test was applied on 20 occasions and in 12 cases a positive result was obtained.

Note:- From this point onwards the Report is confined to the work performed at the Department's Central Laboratories.

2. MEDICO-LEGAL INVESTIGATIONS.

These dealt mostly with enquiries into the nature of stains on clothing, and such as required application of the differentiating precipitin test have already been referred to under the heading Routine Diagnosis (d) (3).

33 stains for detection of spermatozoa were examined, while on 12 occasions the nature of material expelled from the uterus was determined.

3. PUBLIC HEALTH EXAMINATIONS.

(a) Water.

A complete bacteriological investigation was made on each sample of ordinary drinking water, aerated water and ice submitted by the Health Authorities throughout Palestine. During the year 1430 such examinations were performed.

(b) Milk.

596 milk samples were examined, in the majority of cases to ascertain the number of bacteria per 1 c.c. but in certain others to detect the presence of tuberculosis in dairy cows.

(c) Examination of imported Shaving Brushes.

Since 1920 Customs Superintendents have been required to forward for laboratory examination 5 per cent, of all consignments of shaving brushes imported. The continued application of this measure has precluded the entry of anthrax-infected brushes. During 1927 the total number of consignments examined was 933.

./.

TABLE I.

RECORD OF BACTERIOLOGICAL EXAMINATIONS PERFORMED DURING 1927.

Nature of Specimens.	Total examinations.	Nature and Number of Positive Findings.	
Blood films.	23923	P.vivax.	2642
		P.malariae.	84
		P.falciparum.	1516
		Sp.recurrentis.	27
Blood cultures.	2656	Bact.typhosum.	172
		Bact.paratyphosum A.	9
		Bact.paratyphosum B.	13
		Bact.coli.	2
		Streptococcus.	5
		Staphylococcus.	3
		Str.pneumoniae.	3
Histological sections.	146	Negri bodies.	60
		New growths.	13
Water for analysis.	1430		
Milk for analysis.	596		
Serum Reactions.			
(a) Agglutination.	11075	Bact.typhosum.	811
		Bact.paratyphosum A.	64
		Bact.paratyphosum B.	162
		Br.melitensis.	18
		Prot.vulgaris X_{19}.	109
(b) Diagnosis of Syphilis.	2498	Wassermann Reactions.	430
(c) Precipitin Reactions.	32	Medico-Legal.	12
(d) Diagnosis of tuberculosis.	2	Besredka Reaction.	2
Sputa.	2971	Myco.tuberculosis.	674
Pharyngeal Swabs, including Naso-pharyngeal and nasal.	2780	C.diphtheriae.	296
		N.meningitidis.	2
		Myco.leprae.	46
		Vincent's angina.	72
Faeces.			
(a) Microscopic examination	20762	E.histolytica (free).	1377
		E.histolytica (cyst).	232
		Giardia intestinalis.	383
		Chilomastix Mesnili.	1
		Trichomonas intestinalis.	756
		WORM OVA:-	
		Ascaris lumbricoides.	774
		Trichuris trichiura.	1659

Nature of Specimens.	Total examinations.	Nature and Number of Positive Findings.	
		Enterobius vermicularis.	100
		Ankylostoma duodenale.	58
		Dibothriocephalus latus.	11
		Taenia saginata.	219
		Hymenolepis nana.	108
		S.mansoni.	13
(b) Cultural examination.	9820	Bact.typhosum.	128
		Bact.paratyphosum A.	19
		Bact.paratyphosum B.	20
		Bact.dysenteriae (Shiga).	135
		Bact.dysenteriae(Flexner)	335
Urines.			
(a) Microscopic.	19532	S.haematobium.	34
		N.gonorrhoeae.	6
(b) Bacteriological.	1645	Bact.typhosum.	21
		Bact.paratyphosum B.	4
		Bact.coli communior.	15
		Bact.coli communis.	104
Rabies.			
(a) Microscopic examination.	81	Negri bodies.	60
(b) Biological tests.	20	Positive.	12
TRANSUDATES and EXUDATES.			
(a) Abscess pus.	918		
(b) Conjunctival exudates.	726	Haem.of Koch-Weeks.	226
		Haem.lacunatus.	88
(c) Cyst fluids.	84		
(d) Lumbar puncture.	132	Staphylococcus.	2
		N.meningitidis.	2
		Str.pneumoniae.	15
		Str.pyogenes.	12
Rats for plague.	464	Past.pestis.	1
Shaving brushes for anthrax.	933	B.anthracis.	0

TABLE II.

LABORATORY FINDINGS IN MALARIA - 1927.

From 23,923 Examinations.

Type and Locality.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Yearly.
BENIGN TERTIAN MALARIA.														
Jerusalem.	7	8	9	7	13	20	26	31	29	27	21	17	215	
Jaffa.	2	3	0	8	0	21	42	45	14	19	25	27	206	
Haifa.	65	33	42	31	45	110	231	127	62	66	87	94	993	
Tiberias.	150	91	30	40	74	123	159	0	0	0	0	0	667	
Safad.	24	8	12	17	38	58	94	54	81	30	82	57	555	
Total recorded.	248	143	93	103	170	332	552	257	186	142	215	195	Total	2636
MALIGNANT TERTIAN MALARIA.														
Jerusalem.	2	1	0	0	2	2	6	31	22	15	11	10	102	
Jaffa.	0	0	1	3	0	1	13	5	0	0	0	0	23	
Haifa.	23	7	2	2	3	55	101	97	128	73	109	68	668	
Tiberias.	68	41	17	4	5	17	16	0	0	0	0	0	168	
Safad.	97	22	15	13	10	10	44	42	67	48	70	91	529	
Total recorded.	190	71	35	22	20	85	180	175	217	136	190	169	Total	1490
BENIGN QUARTAN MALARIA.														
Jerusalem.	2	0	0	0	0	0	8	0	0	0	2	2	14	
Jaffa.	2	0	13	1	13	0	0	0	10	3	13	12	67	
Haifa.	3	1	0	0	3	1	2	3	4	2	0	0	19	
Tiberias.	8	5	5	4	4	4	3	0	0	0	0	0	33	
Safad.	0	0	0	0	0	0	0	0	0	0	1	5	6	
Total recorded.	15	6	18	5	20	5	13	3	14	5	16	19	Total	139
Total Monthly Findings. (all forms).	453	220	146	130	210	422	745	435	417	283	421	383	Yearly	4265

(d) Examination of imported Vaccines and Sera.

A regulation in force since 1922 is to the effect that release of certain preparations from Customs may not be sanctioned until a report has been received upon a sample sent to the laboratories. This regulation refers to vaccines, sera, virus (rat killer) and all products of bacterial origin. 357 such examinations were carried out during the year.

(e) Identification and Examination of Snails.

The endemicity of urinary Schistosomiasis has resulted in a continued forwarding from all districts of snails for identification. In only two regions have infected snails been discovered and these were mentioned in last year's report. The species of snail incriminated with the dispersal of Schistosomiasis in Palestine is Isodora truncata. During the year considerable attention has been given to an enquiry into the reason for the limitation of these snails to two areas. The hypothesis that distribution of Schistosomiasis might be dependent on the hydrogen ion concentration of the soil and water as limiting the distribution of the snail-hosts and affecting the liberated miracidia led to over 200 examinations being made on waters from all over the country.

The regional reaction of snail-bearing areas proved to be within the range pH 6.6 to pH 8.4, but the results of the investigation pointed to pH values' being not the cause but only one contributing cause of limitation of snail spread. Isodora development was found normally to take place between pH 7 and pH 7.4.

(f) Examination of Rats for Plague.

509 rats were examined during the year and on no occasion was Pasteurella pestis found.

4. THE VACCINE INSTITUTE.

The part played on behalf of Palestine by the Vaccine Institute may best be appreciated by brief reference to certain general and financial considerations.

No failure of anti-rabic treatment among 788 bitten persons exposed to risk of infection has to be recorded. Only one case of small-pox occurred; this case died in Jerusalem from an infection contracted in Damascus. Steps taken to deal with possible contacts and so to prevent an outbreak of small-pox in Jerusalem, involved in this instance a laboratory issue of over 30,000 doses of calf lymph within 12 days. The morbidity and mortality rates of the enterica have shown gratifying decreases. No case of cholera was reported. The large quantity of anti-cholera vaccine prepared (60,800 doses) was necessary to ensure adequate protection of the Palestine portion of the Mecca Pilgrimage, on the one hand, and, on the other, to safeguard the country against an invasion from Iraq of the cholera there present in epidemic form. The preparation of anti-plague vaccine was also undertaken in a quantity likely to be sufficient for immediate needs in case of any outbreak in Palestine.

Manufacture of the vaccines responsible to some definite degree for conditions obtaining during 1927 effected an economy to Government of over £P.6000.

Actual expenditure over revenue amounted during the year, however, to £P.5541, but the Vaccine Institute produced vaccines to an equivalent of £P.6019. Thus, as in 1926, not only did the Institute manufacture all prophylactic and curative vaccines required in Palestine and Transjordan, but by such manufacture effected a saving which more than accounted for the total emoluments of the laboratory staff, bacteriological, chemical, clerical and labour, for the cost of all materials used in vaccine production, and provided further for the cost of all new apparatus and reagents used in routine diagnosis and in experimental investigation - a provision which enabled over 30,000 examinations to be carried out.

(a) The Anti-Rabies Division.

Departmental policy in anti-rabies treatment remained complete decentralization. The vaccine, prepared in the bacteriological sub-section, was distributed to ten subsidiary treatment centres in Palestine, to Transjordan and to Royal Air Force depots in both countries. Four additional centres are in process of formation in the more populous of the Jewish Colonies.

The Central Institute as in previous years was not only responsible for the manufacture and issue of all anti-rabies vaccine required but, by acting as the Jerusalem treatment station, it served to control the efficacy of the product.

The vaccine prepared was a carbolized virus, killed by the combined action of 1 per cent. phenol and heat (37°C. for 24 hours), while that used for treatment consisted of a 1 per cent. brain emulsion in 0.5 per cent. carbolic solution.

The system of dosage employed was universal: each person treated received the same total quantity of nerve substance - 0.7 gramme, i.e. 5 c.c. daily over 14 consecutive days.

Results of treatment were entirely satisfactory: there occurred no failure rate, no paralytic accidents, no abscess formation.

The quantity of anti-rabies vaccine issued during 1927 totalled 71,585 doses.

As regards canine prophylaxis, a modification of Semple's vaccine has been proved by experiments conducted over two years to yield reasonable protection by means of a single dose. The preparation was issued to meet the requirements of the Veterinary Authorities. It consists of a 20 per cent. F.V. brain emulsion in 1 per cent. carbolic acid exposed to the action of 37°C. over a period of 120 hours. Dosage is from 5 c.c. to 10 c.c. according to the size of the dog.

TABLE III.

GOVERNMENT ANTI-RABIES INSTITUTES.
GENERAL STATISTICAL TABLE.

+ + +

January 1, 1927 to December 31, 1927.

No. of persons treated at the Anti-Rabies Centre	Jerusalem	154
" " " " " "	Jaffa	360
" " " " " "	Haifa	179
" " " " " "	Ramleh	27
" " " " " "	Tulkarem	7
" " " " " "	Nablus	7
" " " " " "	Gaza	22
" " " " " "	Tiberias	14
" " " " " "	Hebron	4
" " " " " "	Acre	2
" " " " " "	Beersheba	2

Total number of persons treated in the various Government Anti-Rabies Centres in Palestine	788
No. of interrupted or unnecessary treatments (Biting animals remaining well after a period of ten days)	311
No. of treatments carried out regularly and completely	477
Cases of Hydrophobia occurring after 15 days of the completion of treatment (Failures)	0
Cases of Hydrophobia occurring during treatment or within fifteen days of its completion	0
Mortality rate, comprising all deaths calculated on patients that ran a definite risk of infection	0
Failure rate	0

Classification according to:			
Species of biting animal.		Dog	541
		Cat	167
		Wolf	0
		Jackal	4
		Solipeds	20
		Ruminants	11
		Other animals	45
Condition of biting animals.		Rabid by Bacteriological and Biological Tests	45
		Rabid Clinically	30
		Suspected by altered behaviour	340
		Unknown (No information available)	62
		Healthy	311
Location of bite.		Head and face	31
		Upper extremity	282
		Lower extremity	455
		Body	20
Severity of bite.		Severe	168
		Slight	620
Whether bite was made through naked skin or thro' clothing.		Naked Skin	477
		Through Clothing	311
Whether efficiently cauterized or not.		Efficiently cauterized	773
		Not efficiently cauterized	15

Yearly Statement of Rabies and its control in Palestine during 1927.

Centre for Treatment.	Bitten Persons		Biting Animals.																											
			Specification.												Condition.						Disposal.									
															Definitely rabid.					Killed.				Ran away.				Kept under observation.		
	No. applying for advice and aid.	No. actually treated.	Bears	Cats.	Dogs.	Rabbits.	Jackals.	Horses.	Donkeys.	Monkeys.	Cows.	Camels.	Rats.	Unknown.	Total No. of Animals.	By laboratory investigation.	Clinically.	Suspected rabid.	Healthy.	No information available.	Rabid.	Suspected.	Healthy.	No information available.	Rabid.	Suspected.	Healthy.	No information available.	Died within 10 days.	Remained healthy.
Jerusalem.	236	236	1	65	124	-	-	4	5	1	1	3	4	4	212	5	1	11	94	101	5	9	-	-	-	-	1	100	3	94
Hebron.	4	4	-	-	3	-	-	-	-	-	-	-	-	1	4	-	-	-	2	2	-	-	-	-	-	-	-	2	-	2
Beersheba.	2	2	-	-	2	-	-	-	-	-	-	-	-	-	2	1	-	-	1	-	1	-	-	-	-	-	-	-	-	1
Jaffa.	420	420	-	94	340	-	2	6	6	1	-	-	12	2	463	21	-	80	165	197	20	10	-	1	-	68	-	195	2	167
Ramleh.	27	27	-	-	21	-	-	-	-	-	-	-	-	1	22	-	-	7	9	6	-	3	-	-	-	4	-	5	-	10
Gaza.	22	22	-	1	14	-	1	-	1	-	-	3	-	-	20	1	-	5	2	12	1	4	-	-	-	1	-	12	-	2
Nablus.	17	17	-	-	11	1	-	1	1	-	2	1	-	-	17	1	1	-	5	10	2	-	1	-	-	-	-	10	-	4
Tulkarem.	7	7	-	-	6	-	-	1	-	-	-	-	-	-	7	1	-	1	-	5	1	1	-	-	-	-	-	-	-	5
Haifa.	202	202	-	27	121	1	1	6	-	4	-	-	20	2	182	9	2	33	63	75	10	13	-	-	1	17	-	75	3	63
Acre.	2	2	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-	1	1	-	-	1	-	-	-	-	-	-	-	1
Tiberias.	14	14	-	3	10	-	-	-	-	-	-	-	-	-	13	3	1	4	2	3	4	4	2	-	-	-	-	3	-	-
Total all Palestine.	953	953	1	190	654	2	4	18	13	6	3	7	36	10	944	42	5	142	344	411	44	45	3	1	1	90	1	402	8	349

(b) The Calf Lymph Establishment.

Lymph manufacture was continued during the cool period January to April, and in that time ample provision was secured for epidemic and routine vaccination needs by the production of 220,000 doses. An average of 30 grammes per calf vaccinated was obtained, equivalent to 7,500 doses.

In default of municipal electric power refrigeration was effected by the immersion of lymph stocks in specially designed containers in the brine tank of a local ice factory. A temperature of -8°C. to -4°C. was thereby assured.

Potency of "seed" lymph was maintained by transfer of lymph from calf to rabbit after every third remove, the resultant eruption yielding on an average from 0.25 to 0.5 gramme of rabbit lymph pulp.

During 1927 the potency index in the control vaccination centre remained 100 throughout. The results of vaccination in the districts and at the ports showed that of the 37,280 primary vaccinations performed 32,869 or 88 per cent. were successful, while the percentage of "takes" among those undergoing secondary vaccination was 50.

Standardization of all lymph before issue was effected by dilution methods, i.e. successful "takes" on children in a dilution of 1:100 following the production of vaccinia in rabbits in a 1:1000 dilution.

The most practical method of preserving the potency of lymph in transit during the hot weather has proved to be that most easily and economically carried out: lymph tubes surrounded by cotton wool thoroughly saturated with water, are packed in boxes of which the lid and sides are freely perforated. By such means the enclosed lymph tubes are kept quite cool by the evaporation of the moisture the hotter and drier the air, the cooler the tubes.

(c) General Vaccine Division.

Preparation of the typhoid, typhoid-paratyphoid, cholera and plague vaccines required was carried on as routine. Of these vaccines the anti-enterica were employed in the protection of immigrants and in the inoculation of case-contacts, while the cholera vaccine was used to confer protection on the Palestinian and Transjordan contingents of the Mecca Pilgrimage.

The type of vaccine and quantity of its production are shown below in tabular form:-

Nature of vaccine.	Total quantity manufactured (in doses).
Anti-typhoid.	32,600
Anti-T.A.B.	38,650
Anti-cholera.	60,800
Anti-plague.	1,500
Total Dosage produced -	133,550

Autogenous vaccines were prepared to the number of 432, the majority being for patients suffering from acne, ozaena, furunculosis and genito-urinary infections.

(d) Anti-Sera.

All agglutinating, haemolytic and precipitin sera used were prepared in the Central Laboratories.

5. RESEARCH.

Research has been carried out along the following lines:

(a) Distribution of Isodora truncata in relation to regional reaction.

(b) Serological diagnosis of the enterica by the method of qualitative receptor analysis.

(c) The production and prevention of neuro-paralytic accidents in anti-rabies treatment.

(d) Evaluation of the immunity conferred by carbolized anti-rabies vaccines.

B. CHEMICAL SUB-SECTION.

1. SUMMARY OF WORK DONE.

A total of 5620 samples has been examined as compared with 5525 in 1926. In addition there has been a considerable increase in the amount of advisory work undertaken, especially for the Department of Customs, Excise and Trade (See Table A).

2. GOVERNMENT DEPARTMENTS AND OTHER SOURCES OF SAMPLES SUBMITTED.

(a) Department of Health.

Of the 3807 samples of milk examined 169 or 4.4% were the subject of prosecutions compared with 3% in 1926.

During the year three additional District Health Offices have been equipped with centrifugal machines and accessories for the examination of milk by the Gerber process. There are now twelve District Offices equipped in this manner and this policy of decentralization allows some measure of control over the quality of the milk vended in all the more important towns and villages. Weekly returns of all samples examined are submitted to the Central Laboratories for scrutiny (See Table B).

As the result of regulations forbidding the use of lead cooling pipes in Soda fountains, tin piping has now been obtained by local merchants and is in general use. In this connection 33 samples of tin piping have been submitted for examination.

./.

The analysis of butter and other edible fats and oils is still an important branch of the work under this heading. Many varieties of butter substitutes of local manufacture are now on the market. Many of these are composed of imported Gamoose Cream blended with vegetable fats. The quality is generally satisfactory, but the methods of labelling often leave much to be desired. A favourite label bears the picture of a cow and the words "Good fresh butter" in bold type qualified by the words "artificial", "mixed" or "vegetable" in very small type. Under new legislation now in preparation it is intended to confine the use of the word "butter" to the genuine article only as in English law.

Samples of drugs confiscated under the Dangerous Drugs Act have included two samples of "hashish" and one of heroin hydrochloride, the latter drug having been smuggled into the country concealed in picture frames.

A weekly examination of sewage from the Jerusalem disposal plant has been continued throughout the year.

(b) Legal, Judicial and Police Departments.

Arsenic has been found in one case out of seven submitted in cases of suspected poisoning, the other six giving negative results. In most of these cases there has been no real evidence in support of poisoning as shown by either the police investigations or the post mortem examination. In the one positive case about a quarter of a gramme of powdered white arsenic was found adhering to the stomach walls. In connection with the same case, a tin, out of which the deceased is alleged to have drunk some tea, was found to contain a few milligrams of white arsenic.

Seven questioned documents have been examined. In a case of theft a padlock, file and pieces of skeleton key have been submitted. Brazing solder was present on the pieces of key and filings of steel and brazing solder were found on the file. Minute scrapings of brass were found on the inner surface of the padlock at a point where the brazed portion of the key would come in contact when turned in the lock.

In connection with the death of three persons owing to the collapse of a hotel during the July earthquake, the question arose as to whether the materials used in the construction of the/hotel were of satisfactory quality. Six samples of the broken concrete from the ruins, together with samples of cement, stones and sand produced by the builder as being similar to the material used, were submitted by the Coroner for analysis, with a request for a report upon the proportion of cement to stones and sand in the concrete.

Specimens of concrete were prepared in the laboratory from the materials supplied and these together with the raw materials and the concrete from the ruins have been analysed for the content of soluble silica by the method of D.Florentin (Analyst 1926 51.480). By this method it has been found that stones and the sand yield no soluble silica and that having found the soluble silica in the cement and in the concrete it is possible to arrive at a close approximation to the proportion of cement to stones and sand used in making the concrete. In this instance the analytical findings confirmed the builder's declaration.

Following the earthquake there were many rumours of volcanic manifestations especially in the Jericho Valley, but the only material submitted for examination in this connection and which was said to have come from an "earthquake crack", proved to be a mixture of sand and gypsum.

Even in Jerusalem, there were persistent reports that smoke had been seen coming out of the ground in one quarter of the old city and the Analyst was finally asked to investigate and examine the "sulphurous smoke". It was found that a greyish white smoke was in fact issuing from the drains in many of the houses in one street. It was noted that it issued with a rapid pulsating motion and that it had an "oily" smell. On these clues being followed up, it was traced to an oil engine in a neighbouring workshop. The exhaust of the engine had been connected directly with the public sewer, which is part of an old drainage system, having no traps between the sewer and the house connections.

(c) Department of Customs, Excise and Trade.

The work undertaken for this Department continues to increase. A table of temperature corrections for Tralles Alcoholometer has been prepared for official use under the Intoxicating Liquors Ordinance 1927. During the four months following the promulgation of that Ordinance, 336 samples of liquors have been examined and 100 alcoholometers tested.

Samples of confectionery and other local products have been examined to ascertain for purposes of rebate of duty the percentage of imported ingredients present. The correct classification of imports under the Customs Tariff Ordinance, and the Customs Duties Exemption Ordinance is a question which is continually referred to the laboratory for opinion. Table C will give an idea of the extent to which the collection of Customs and Excise revenue is now dependent upon the services of the laboratory.

(d) The Geological Adviser.

Under this heading samples of bituminous lime stones phosphates, iron ore, and other minerals have been examined. Samples of water in connection with public supply schemes have also been submitted.

(e) Railways.

Samples examined under this heading have included coal, clinker, water, lime and axle greases.

(f) Public Works.

Samples of lubricating oil and benzine have been submitted in connection with Government contracts.

./.

(g) Department of Agriculture and Forests.

Samples of viscera concerned in eleven cases of suspected animal poisoning have been examined for the Veterinary Service. In nine of these, arsenic has been found, the other two giving negative findings.

(h) Department of Antiquities.

One sample of water, one of barytes, one of wheat and one of sesame seed have been submitted.

The wheat and sesame seeds were found among objects of the time of Seti I (B.C.1300 approximately). Both the wheat and the sesame were in a carbonised state though retaining the original shape of the grains. The sesame seeds contained 3% of oily matter soluble in petroleum ether. This failed to give the furfuraldehyde test for sesame oil.

(i) Education Department - Palestine Board of Higher Studies.

The Chemistry papers of the matriculation and intermediate science examinations have been set and corrected by members of the Laboratory Staff.

Samples examined in the Chemical Sub-Section during 1927.

Material.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Water.	-	8	19	30	28	29	29	34	29	21	10	9	246
Milk.	263	232	320	307	328	348	302	289	340	370	380	328	3807
Alcoholic Liquors and Foods.	82	62	8	46	26	58	70	62	78	73	72	149	786
Aerated Waters and Cordials.	12	9	15	14	23	19	39	12	17	33	10	15	218
Drugs and Disinfectants.	4	5	13	10	12	7	4	5	11	7	12	7	97
Soap, Mineral Oils, and other commercial products.	11	5	12	17	13	6	4	22	2	3	12	6	113
Medico-Legal and Chemico-Legal.	17	6	3	5	4	4	11	15	7	5	5	5	87
Ores, Minerals and Metals.	2	5	6	6	5	5	6	4	22	1	5	2	69
Miscellaneous.	6	9	9	40	35	18	7	11	15	25	14	8	197
Totals.	397	341	405	475	474	494	472	454	521	538	520	529	5620

TABLE B.

Milk Analysis in the Central Laboratory & Districts - 1927.

District.	No. of samples.	No. of Prosecutions.
Jerusalem.		
Hospital Supplies.	368	68
Street Vendors.	296	
Jaffa.		
Hospital Supplies.	95	17
Street Vendors.	380	
Ramleh.	306	-
Gaza.		
Hospital Supplies.	67	3
Street Vendors.	476	
Tulkarem.	354	-
Haifa.		
Hospital Supplies.	6	47
Street Vendors.	540	
Acre.		
Hospital Supplies.	110	5
Street Vendors.	113	
Nablus.		
Hospital Supplies.	22	1
Street Vendors.	53	
Tiberias.	118	21
Hebron.	88	1
Bethlehem.		
Hospital Supplies.	4	4
Street Vendors.	73	
Ramallah.	102	-
Beersheba.		
Hospital Supplies.	142	-
Street Vendors.	1	
Safad.	93	2
Total.	3807	169

TABLE C.

Outline of work now undertaken in connection with the collection of Customs and Excise Revenue.

+ + +

Ordinances or Regulations.	Materials Submitted.	Nature of Examination.
Customs Tariff Ordinance.	Imports in general and documents relating thereto.	To determine correct classification in the schedule of import duties.
Customs Duties Exemption Ordinance.	Raw materials for certain industries, drugs, insecticides, building materials etc.	For identification and classification.
Rebate on Re-export regulations.	Confectionery and other local products.	To determine properties of imported ingredients.
Prohibited and restricted imports and exports regulations.	Alcoholic liquors, essences, drugs.	For identification and classification.
Tobacco Ordinance.	Tobacco, Snuff and raw materials.	For report on nature and quality.
Salt Ordinance.	Salt.	For analysis and comparison with the "Standard Sample".
Ports Ordinance.	Petroleum.	For flash point.
Intoxicating Liquors Ordinance 1927.	(a) Wines, Spirits and other liquors. (b) Raw materials used in manufacture. (c) All alcoholometers in use by Excise officers.	(a) For alcoholic strength. (b) For identification and opinion as to suitability. (c) For test against standard Alcoholometers.

APPENDIX I.

REPORT ON THE ACTIVITIES OF THE MALARIA SURVEY SECTION, GOVERNMENT OF PALESTINE, for 1927.

+ + +

The Malaria Survey Section, attached to the Government of Palestine by the Rockefeller Foundation, continued its activities along the same general lines which have been followed since its inception in 1922. It is to be noted, however, that the personnel of the Section has gradually been reduced until at the present time the only permanent member of the staff is an engineer director. A small budget permits of the employment of casual personnel to assist in field surveys, etc.

General data concerning Palestine, including topography, climate, rainfall, etc., etc., have been discussed in many previous reports. It is not deemed necessary, therefore, to go into details regarding these features.

During 1927, the activities of the Section were devoted to: (a) field surveys of permanent and temporary watered areas, including the preparation of maps, plans and cost estimates for draining such areas, (b) advising and assisting the local Health Department in routine malaria control projects, and (c) collection and study of Palestine Anopheles.

In addition to the above, many inspections were made and engineering advice given on projects to be undertaken by the Malaria Research Unit, an organization attached to the Palestine Government by the American Joint Distribution Committee.

Detailed reports of projects undertaken were submitted along with quarterly progress reports during the year and copies are on file in the Department Headquarters. For this reason a summary of the projects only, will be given in this report.

Field surveys were made, maps prepared and drainage schemes developed for the following areas:

RUBIN AREA.- The so called Rubin Area lies near the coast about eight miles south of Jaffa and covers an area of about 25 square kilometres.

The population living in the area throughout the year probably does not exceed 200 persons. However, during the late summer or early autumn an annual religious festival, lasting about six weeks, is held. The number of "Pilgrims" attending this festival varies from year to year but an attendance of from twenty to thirty thousand is usually present. The visitors live in tents or other crude shelters which offer no protection whatever against mosquitoes.

The chief importance of the place from a health point of view lies in the fact of this large annual gathering of people from practically all parts of Palestine, many of whom become infected with malaria, suffer from it while attending the festival, and return to their homes as "carriers".

./.

A field survey of the area which includes the Nahr Rubin from its outfall at the Mediterranean Sea to a point about seven kilometres upstream, and a marsh covering about 1200 dunams lying on the north of and adjacent to the Nahr, was completed on January 1, 1927.

The marsh which is thought to be responsible for at least 75% of the Anopheles produced in the entire area is so situated that its drainage by gravity is a relatively simple project. Due to the character of the soil, the large amount of water and the rank growth of aquatic vegetation present it was recommended that the canalization be done with dynamite.

It was also recommended that certain sections of the Nahr proper, which offer ideal breeding places for mosquitoes, be rechannelled and straightened and that a levee be constructed along the bank of the Nahr for a distance of about seven hundred metres to prevent storm water from overflowing into the marsh during the rainy season. If the levee were not built the maintenance of drainage canals in the marsh would be impossible.

The whole of the work is estimated to cost approximately £E.3700.

WADI MUSRARA.- Wadi Musrara, a tributary of the Auja River, rises some six miles to the east of Jaffa and empties into the Auja River about twelve kilometres from the sea. Its course is very tortuous and a sufficient amount of water flows throughout the year in the lower five and one half kilometres of its bed to create a serious malaria menace to the numerous colonies and villages located within two kilometres of its course. The source of this water is from springs which rise along the wadi bed. During the rainy season the wadi becomes a raging torrent and as a result much erosion takes place, forming depressions and pools which become prolific sources of mosquitoes during the breeding season. It is estimated that the population affected by the wadi is around 2000 persons.

A field survey made in October and November 1926, indicated that an expenditure of approximately £E.4000 would be necessary to properly drain the upper two thirds of the area. It also showed that the lower end of the wadi was below the water level in the Auja River, making drainage of that section of the Wadi extremely expensive.

In view of this, and the fact that the Auja itself is easily within flight range of most of the population, and is a potential breeding place for enormous numbers of mosquitoes, this Section recommended that the expenditure of such a sum of money as would be required was not justified. The Director, Department of Health, concurred in this opinion and no work is contemplated at the present time.

BIRKET RAMADAN.- Birket Ramadan, a swamp covering about 5000 dunams (1100 acres) is located near the Mediterranean Sea about 15 miles north of Jaffa. The land surrounding the marsh is very fertile and good crops could be grown were it not for the enormous numbers of Anopheles mosquitoes which are always present. Agricultural pursuits are carried out under a great handicap as practically all the population are infected with malaria and any new labour moved into the area immediately become infected with the disease. 63 persons, living near the marsh, and picked at random, were examined for enlarged spleens. 58 of the 63, or 92%, had enlarged spleens. About 2000 persons live within flight range of the marsh.

A field survey was begun on May 23rd, and completed on August 3rd. Drainage of the area would cost at least £E.8000 to £E.9000. Drainage for malaria control would consequently not be economically justified. On the other hand, when the shortage of good agricultural land in Palestine is considered there is little doubt that the drainage of this area would be a profitable investment. It is therefore hoped that a plan may be developed, whereby financial arrangements can be made to drain the area and throw it open to cultivation and at the same time remove the handicap under which some 2000 people are living.

During the period of the survey Anopheles mosquitoes were always present in large numbers. From 200 to 300 A. elutus could be collected without difficulty in the early morning hours in any one of the six tents occupied by the survey party. In spite of the fact that each member of the party slept under a mosquito net, and some took prophylactic quinine, each individual, 13 in number, went down with malaria. This, in a small way, illustrates what would be expected to happen should development of the area be undertaken without first having freed the area of Anopheles.

A preliminary survey was made and a scheme with estimate of cost submitted for control measures at the following place:

ZERKA.- The Transjordan Frontier Force is searching for a permanent camp site settled on an area lying near the River Zerka and the village Zerka. The selection of this site was made over the strenuous protest of the Director, Department of Health and his advisers, who, upon investigation, had found the area very malarious. An index, taken in the village Zerka showed a rate of 46% enlarged spleens.

The chief source of Anopheles production is the River Zerka, a perennial stream which meanders in a tortuous course passing within about a kilometre of the camp site. Many favourable types of breeding places abound in the river bed.

Prolific breeding was observed at many points along the stream on August 8th, and again on October 14th. Collections of larvae were made and identified as A. elutus, A. superpictus and A. sergenti-elutus predominating.

From a mosquito control point of view the area presents many difficulties. However, certain suggestions were submitted (see report on River Zerka) which if properly carried out would no doubt greatly alleviate the serious conditions now facing the occupants of the camp.

./.

A scheme was submitted, numerous inspections made and advice given on control operations undertaken at the following places:

MEGIDDO.- During the autumn of 1925 a party representing the University of Chicago began archeological excavations at Tel el Mutasallim near Megiddo. During the season of 1926 they were seriously handicapped by an epidemic of malaria. A small amount of canalization and tile installation was done late in autumn of 1926. This work was all destroyed by the rains during the winter of 1926-27.

A visit was made to the spot in April and a drainage system laid out and installed. The work consisted of open ditches and instruction in the application of Paris Green. Approximately £E.50 was spent in completing the job.

Reports from the expedition indicate a successful control as no new infections occurred during the year. Frequent searches were made by the Senior Medical Officer of the district who reports that he found comparatively few Anopheles.

JISR MEJAMIA AREA.- During the latter part of 1926 the Palestine Electric Corporation enquired of the Department of Health regarding the danger from malaria in the area surrounding Jisr Mejamia where it was proposed to construct hydro-electric works on the Jordan and Yarmuk Rivers. The P.E.C. planned to move a working force of 1000 men into the area during the early spring.

After a preliminary survey by the Department of Health a scheme and estimate of cost was submitted which was adopted by the P.E.C. who agreed to finance the work. The Department of Health agreed to supervise all control measures.

It was deemed necessary to place an area covering about 160 square kilometres under control. The sources of Anopheles mosquitoes were: (a) about 28 kilometres of neglected main irrigation canals; (b) marshes and seepage areas in and near the canals; (c) numerous springs and seepage areas along the Wadi Arab; (d) the shore lines of the Jordan and Yarmuk Rivers, and (e) many kilometres of subsidiary irrigation canals.

Control work was begun in March. The main irrigation canals were re-channelled, straightened and regraded and control gates installed wherever necessary. Irrigation was then controlled by these gates. The farmers in the area were then made to put the subsidiary canals in order. Many springs and seepage areas were drained and regulated. Other breeding places, which could not be eliminated, were treated regularly with Paris Green with very satisfactory results.

The P.E.C. were delayed in starting their work and it was at the beginning of August before a working party was established. At this time 120 men were moved in. This number was gradually increased, until, at the end of November, there were 250 men living in the area.

Malaria infections, believed to have been incurred in the camp, were as follows: September, 1 case; October, 16 cases; November, 11 cases.

Considering the many difficulties encountered the control was fairly satisfactory. Should the work be continued next year under the direction of the Health Department, it is thought that malaria infections in the area will be reduced to a minimum. All major work was done this year which means that more attention can be given to routine control in the future. The cost of the work in 1927 amounted to approximately £E.1600.

Field inspections and examination of plans were made and suggestions offered for the handling of the following projected schemes: Upper Kishon Scheme, Lower Kishon Scheme, Jericho, Yebla, Tel el Shoq, Wadi Manoilla, Ain el Lassawir, Wadi Solim, Ain el Maite, Haidadoun, Wadi Ishkar, Birket Batikh, Cherkas, Wadi Kubatie and Birket Atta.

COLLECTION AND STUDY OF PALESTINE ANOPHELES.- This phase of activities was conducted at odd times during the year. Necessary duties along other lines precluded the devotion of much time to the subject.

Collections of larvae and imagoes of the eight Palestinian Anopheles were made throughout the year and many of the specimens mounted for future study and distribution to the personnel engaged in malaria work. Identification charts of the larvae of the various species were begun and will be completed as time permits. It is hoped that more time will be available during the coming year to enable the continuation of this important phase of the work.

APPENDIX II.

REPORT OF THE MALARIA RESEARCH UNIT
for 1927.

+ + +

A. INTRODUCTION.

In April 1927, the district Afuleh was transferred to the Government, the Medical Officer Nazareth assuming charge of that district. The Musrara district was severed from the Petach Tikvah district, and its control was taken up by the Medical Officer of Tel Aviv. The Nuriz district was transferred to the Government on September 1st, 1927.

In connection with the malaria research work of Dr. Kligler in the Upper Galilee region, the work of the Malaria Research Unit Sub-Inspectors of that area was extended in the early fall towards the area and settlements along the Lake Merom, while the control of Rosh Pinah-Machnaim area was taken over by the Medical Officer of Safad.

The Malaria Research Unit has taken up in the spring the work for the new settlements Kfar Joshua and Kfar Baruch which comprised the control of the whole East Kishon area and environment, beginning with the Afuleh limit.

The Department of Health having taken up the control work for the Palestine Hydro-Electric Corporation in the Jisr el Mejamie and Transjordan area, the Malaria Research Unit was given the control of the rivers Jordan and Yarmuk and the wadies of that neighbourhood with mosquito control of the settlements.

B. ABSTRACT OF THE ANNUAL REPORT OF THE MALARIA RESEARCH UNIT FOR 1927.

1. The districts controlled by the Malaria Research Unit during 1927 were as follows:- Magdiel, Hedera, Zichron-Benyamina, Yajur-Kfar Joshua, Nuriz (till September 1st, 1927) Kinnereth, Yavniel, Rosh Pinah, Metullah.

The rainfall of 1926/27 both by virtue of its amount and character of distribution, which was different from that of the previous years, contributed towards the creation both of a rich and continuous flow of water in the springs and wadies coming from the hills, and of an abundance of water in the coastal swamps. At no time in the experience of the Malaria Research Unit had there been such universally difficult condition of swamps.

Under these conditions it is clear that in places like Hedera where anything like satisfactory control of Birket Atta is impossible at any time, control was out of the question this year, a fact which was reflected in the heavy epidemic in Hedera during June and August. In places where control may be effective, this year's work again proved the value of anti-larval work even under such difficult swamp

/conditions.

conditions. Thus, satisfactory results were obtained in Magdiel, Nuriz (during the period of the M.R.U. control), in Kinnereth during the spring, in Rosh Pinah-Kfar Giladee and in Zichron-Benyamina where satisfactory malaria conditions prevailed throughout the year except in the month of July.

The types of larvae in the various breeding places were studied and compiled. The earliest date at which the various larvae were found freely in swamps, periodically examined, were as follows:

A.elutus: In winter puddles near Hedera at the end of February. In Eucalyptus grove, Kinnereth on March 6th.

A.superpictus: In Wadi el Birah on March 15th.

A.sergenti: In seepage canal at the Russian Gardens near Tiberias (hibernating) on February 1st and the first summer ones on September 5th and 6th in the irrigation canal of Abadiya and in the gravel swamps of the Jordan.

A.pharoensis: In many scattered places, as among Potomageton leaves in Jordan during September, in the puddles around the flour-mill channel near Migdal in December, and in channels and puddles in Almania springs in November.

A.elutus breeding was heavy in May, June and July, the latter month being the peak, with a recess in August and September, becoming marked again in October though less intensive than in the early months.

A.superpictus bred heavily up to the end of September with the peak in August, when it was noted than pupae bred out in the field on the seventh day after previous Paris Green treatment. After September the period of larvae development was lengthened and the breeding of A.superpictus generally was reduced. A.sergenti bred fairly evenly through September to December when breeding became less marked.

A.pharoensis larvae were found between September and December in Lower and Upper Galilee.

Generally, there was noted a greater mosquito activity as compared with last year, especially in places where swamps were not controlled throughout their whole length.

2. Methods of Control Work.

There were no changes in the control methods from previous years. Paris Green was the larvicide mostly used. However, while it has proven perfectly satisfactory for stagnant Birkets, pools, shallow places in rivers, its use in wadies with a stream and especially those with a rock and gravel bed is wrought with difficulties and requires special care in order that results may be secured. Paraffin and Cresol mixture spray followed by a scraping of the bed with a stiff brush was of use.

Mechanical means of cleaning, channelling, damming and building up barriers of stone and sand between the stream and area flooded, employed in the gravel swamps of Jordan, Yarmuk and wadies were of distinct help, as they assisted in drying large areas.

./.

The method of diverting the waters of canals and wadies to the field or to other wadies was used and proved as useful as before. With irrigation canals and flour mill runs favouring prolific breeding of A.superpictus and sergenti, the alternation system was again seen to be an absolute necessity. Following alternation, inspection and treatment of remaining wet areas was resorted to before canals were opened again. Ordinary flushing even by a heavy stream proved to be inadequate to destroy A.sergenti larvae, which usually harbour in the vegetation along the banks of the canals.

3. Antimosquito Work.

There are some essential differences in the mosquito numbers of the two years 1926 and 1927. Thus, in 1927 practically in all places there is an increase in mosquito numbers in the spring season, while in the fall season there was in all areas, except in Ayeleth, a lessening of the total number of mosquitoes in 1927 as compared with 1926.

It was also learned that searches for mosquito index determination should not be made through the year in certain exclusive corners but range of searches should be extended to correspond to the customary shifts of habitat of the mosquito, subject to changes in the temperature or attraction of the environment.

The question of long distance flight in the fall received additional proof from 1927 conditions in the Kinnereth and Roshpinah areas. In the former, the local swamps were even more apt to breed A.elutus this fall than they were in 1926. And yet with the control methods unchanged the mosquito catches of A.elutus in the settlement nearest to the swamp were smaller this than last year. In the latter, mosquito searches from Huleh to Roshpinah showed that the mosquitoes (A.elutus) remained within a normal radius (3 kilometres) from their breeding-places during the spring and summer months, but beginning with the fall - September - there is a gradual extension to all intermediary points from Huleh towards Roshpinah, the total number diminishing in the immediate Huleh region and increasing at the more distant points in November and December. This migration is also accompanied by a change in habitat by the mosquitoes immediately at breeding places, i.e. they leave their summer quarters - tents - and invade the stables and store-rooms so that the diminution there too is in the line of search for wintering habitats. Mishmar hay Yarden serves as a good example. There up to end of August A.sergenti are the predominating if not the only adult mosquitoes, the breeding in the nearby swamp also showing A.sergenti. Beginning with October and through November there are 70-100% A.elutus in this settlement, while the local breeding becomes very low and gives 89% of superpictus and sergenti and only 11% of A.elutus.

./.

It is rather interesting to record that A.pharoensis which was previously considered to be a rarity in Palestine were frequently found in various parts of the country during the 1927 searches.

A. breeding found in Rosh Pinah, Mishmar
and Malacha during 1927.

+ + +

Place.	Name of Swamp.	Date	A. larvae breeding					Character of breeding.
			% El.	% Sup.	% Serg.	% Hyr.	% Phar.	
Rosh Pinah.	Reservoirs.		-	100	-	-	-	Scattered
	Water supply pipes.		-	100	-	-	-	"
	Water tower and trough.		-	100	-	-	-	"
	Ain Rafah.		-	-	-	-	-	
	Pipes & swamps near the Gendarmerie Camp		-	100	-	-	-	"
Mishmar.	Wadi el Loxiyeh.	22.8	-	100	-	-	-	Heavy
	Three Mills.		-	-	-	-	-	
	Syrian Springs.	21.6	+	+	+	-	-	Very heavy
	" "	9.7	+	+	+	-	-	" "
	" "	21.8	-	-	100	-	-	" "
	" "	29.9	-	20	80	-	-	" "
	" "	10.11	11	63	26	-	-	" "
	Sulphur Springs.	21.8	-	-	100	-	-	
	Jordan.	9.7	100	-	-	-	-	Light.
Teleil.	Ein el Teleil		-	-	-	-	-	
	(Springs & puddles (near Teleil No.1	9.7	-	100	-	-	-	Heavy.
	" " " 1	21.8	-	95	5	-	-	"
	" " " 2	21.8	-	95	5	-	-	"
	" " " 3	9.7	-	100	-	-	-	Medium.
	" " " 3	16.11	-	20	80	-	-	"
	Huleh Surface. Swampy areas.	8.7	100	-	-	-	-	Heavy.
		21.8	25	-	25	50	-	"
		18.11	100	-	-	-	-	"
Malacha.	Springs.	9.7	+	+	-	-	-	Medium.
		16.11	40	20	20	20	-	"
	Shore of Huleh surface swamp area.	21.8	10	-	-	90	-	Heavy.
		29.9	10	-	-	90	-	"
		16.11	25	-	25	50	-	"

Generally the Malaria Research Unit employed anti-mosquito work systematically (both for the purpose of indexing and of reducing the actual numbers). It proved very useful as an index of mosquito situation and their sources but as a relief method in case of heavy mosquito invasions it proved to be inadequate.

In places dealt with by the Malaria Research Unit where the malaria carriers are present mosquito killing in the settlements could not be relied upon as the only method of relieving the malaria situation.

The anti-mosquito work can at best act only as a palliative, since the largest numbers of the mosquitoes can only be caught after they have entered the settlement and had a chance to bite.

4. General Epidemiologic Survey of the Malaria Situation in 1927.

The difficult swamp conditions of 1927 together with the existence of parasite carriers created by the fall epidemic in Lower and Upper Galilee of 1926 made favourable ground for epidemics. By virtue of the anti-larval work done epidemics were prevented in most of the areas, except Hedera and Yajur areas.

From the study of the incidence of primary malaria as distributed throughout the year, it is also seen that there is a rise of cases during the month of July, then a big drop in August, indicative of the checking of the epidemics in the three localities threatened. Except for July and August there is a low incidence everywhere.

Thus, in Magdiel area where new additional breeding places had opened up, the situation was controlled early and the months of spring and summer epidemic season passed by with 9 primary cases for a population of 1350 or with an average monthly incidence of 0.14. In fact, there were altogether 20 primary cases for the whole district throughout the whole year. Considering the malaria situation in this district before control work started, one can easily appreciate the results achieved. Thus, in 1925 when partial control work was started there were 45 cases throughout the year in Magdiel alone with a population of 200 or 22.5%, while in 1927 there were throughout the whole year in the same colony 11 cases to a population of 422 or 2.6%.

Benyamina colony lies in the midst of the swampy areas, which are sources of heavy A.elutus and to a lesser extent also of A.superpictus and sergenti breeding. Careful mosquito searches were made throughout the year. Except for the month of July the number of mosquitoes in the colony was very small.

The reduced number of mosquitoes in this colony was due entirely to the anti-larval work which was carried out in all parts except in the inaccessible areas of Southern Kabbara and in the swamps of Sufsafi.

This work had its effect also on the malaria incidence, the average monthly rate of which was 1.5 in 1927 as contrasted with 2.6 in 1926.

Zichron Colony too was previously known as a malaria place, it being affected by the Kabbara area below, 2 kilometres distant. This year an attempt was made to do more intensive control in those areas of Kabbara already drained with the results that the mosquito incidence in the colony, especially in the Friedlaenderfarm was reduced and the average monthly malaria incidence was 0.1.

The Jordan area has two epidemic seasons. In the spring the mosquitoes are from local sources and can be controlled with intensive control. This year of course the swamp picture was even more complicated, as mentioned above, and yet, the average number of monthly primary cases for the spring epidemic season - May to September - was 5.4 to a population of 550 or 0.98%.

The same satisfactory conditions were obtained in Rosh Pinah Machnayim and Kfar Giladee.

In Hedera area the swamp Birket Atta because of its size and of the thickness of vegetation covering it, was unapproachable, except by aeroplane, and reliance had to be laid entirely upon anti-mosquito work. But here the dispersion became so intensive and so rapid that with even additional staff employed no desirable impression could be made on the mosquito situation.

In the Yajur area trouble was experienced on account of one very difficult wadi which in previous years dried around May, when the waters were being diverted for irrigation at a point of 3-4 kilometres from the settlement. (This place bred A.hyrcanus in April, and elutus appeared there early in June in 1926). This year, however, because of heavy and late rains the waters did not dry up in May and never dried at all during the year. Special measures were then instituted in that area around May, but there were difficulties in finding a satisfactory solution to this problem, and it took about a month after the trouble became evident before the situation was in hand.

The satisfactory results of the anti-larval work in areas like Magdiel, Benyamina, Kinnereth (during the spring), Upper Galilee, under the very difficult swamp conditions, speak very well for the usefulness of such work systematically carried out.

The general autumn picture of the malaria incidence in the Malaria Research Unit control areas was more satisfactory in 1927 than in 1926. This reduction was favoured by the comparatively low invasion of A.elutus in the fall of 1927. It was again noted this year that the results for the fall malaria incidence gave a higher number of B.T. than M.T. Thus, in Kinnereth region during the months of October-December out of the 77 primary cases there were 47 B.T. and 30 M.T.

In the Hadassah Laboratory Tiberias, there was the following number of B.T. and M.T. for Tiberias in 1927:

	Sept.	Oct.	Nov.	Dec.
B.T.	87	102	174	185
M.T.	44	92	150	131

The incidence of secondary cases was higher this year than in 1926, most of them being B.T. infections. This is partly explained by the high number of primary cases in the fall of 1926 and by the spring epidemic in Hedera, though the real underlying cause lies in the resistance to quinine treatment of B.T. infections and in the incompleteness with which treatment is taken by many patients, a fact not altogether depending upon lack of drug, but rather due to the old belief that once the fever is over - malaria is over.

The Malaria Research Unit carried out in the spring of the year blood and spleen examinations of the inhabitants in the affected areas and instituted treatment of quinine of those found chronically infected among the Jews and Arabs. A small experiment with Plasmochine treatment was started but the work was not sufficiently conclusive to be included in the report.

5. Drainage Activities.

This year as in 1926 all the plans and work done was carried out under the supervision and with the active cooperation of Mr. Carter, Controller of the Malaria Survey Section.

The following works were done:

(a) Rebuilding of Wadi Solim dam destroyed by the rains of 1926-27.

(b) Hadeidoon: This swampy area is a good breeder of A.elutus and affects Benyamina. A survey and estimate was made and measures taken to get the various contributions from the parties concerned, which in addition to the Malaria Research Unit share will allow the carrying out of the work, The first work - that of grading the canal and blocking by a dam the entrance to the old wadi was yet completed in 1927, the work of draining the seepage area by tiling is to be continued in the spring of 1928.

Since the lower portion of Wadies Ishkar and Adas was found to have an effect on Magdiel, the place was surveyed and plan prepared for additional regulation, which work will be carried out in the spring of 1928.

Surveys were also made of the following:

Wadi Marah, Birket Batikh, Wadi Sufsafi, Wadi Shikak, Wadi Muweile, Wadi Melek, Wadi Ain Beda (for alternation purposes).

The Malaria Research Unit has worked closely in touch with the P.I.C.A. and Keren Kayemeth, the organizations carrying out extensive drainage works, - the former at Kabbara and latter on the regulation of the Kishon bed.